American Machinist

JANUARY 27, 1958 PRICE ONE DOLLAR

GUIDE TO '58 PRODUCTION EQUIPMENT

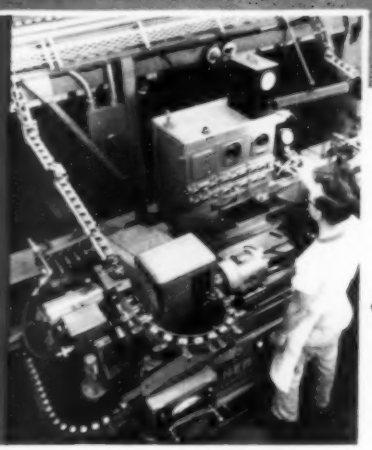
— see page 2

McGRAW-HILL MAGAZINE OF METALWORKING PRODUCTION

Over 70 Heald Internals precision grind

60 MILLION

Bearing Races a Year at The Timken Company's "AUTOMATIC FACTORY"



These two rows of Heald Model 190 Centri-Matics, on lines four and five of the Cone Finishing Department at Bucyrus, grind bearing cone bores to a tolerance of .0005. Cycle time ranges from 14 to 25 seconds, depending on size and stock removal.

Close-up view of one of the 29 Model 190 Centri-Matics showing conveyorized workhandling equipment. The parts come to the inclined loading chutes from the conveyor belt at top left. As the cones leave the machine through the unloading chute they are demagnetized. The sizing gage on top of machine permits quick checking of tolerances.

From raw tube stock to precision-finished bearing races, untouched by human hands! This—the ultimate in automation—has been successfully achieved at the Bucyrus, Ohio, plant of The Timken Roller Bearing Company. Here, a total of 60 million cups and cones a year are rolling off of America's most fully automated production lines. Sixty million individual bearing races—formed, heat treated, machined and sized in one continuous, fully automatic cycle.

The I.D.s of all races are finish ground on Heald Centerless Internals—43 No. 10 machines for tapered bores of outer races and 29 Model 190 Centri-Matics for straight bores of inner races. These are *standard machines*, fully automatic in loading, cycling and unloading. Hence they were integrated into the automated production line simply by the application of suitable conveyorized workhandling equipment.

For complete information on these or any other internal or rotary surface grinders, just get in touch with your Heald engineer.

HEALD

IT PAYS TO COME TO HEALD!

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

American Machinist

McGRAW-HILL MAGAZINE OF METALWORKING PRODUCTION

NEWS REPORT ..

. . . Spot News . . 89
. . . Washington . . 91
. . . Detroit . . 93
. . Aircraft and Missiles . . 95
. . . Machine Tools . . 97
. . . What's Ahead . . 99
. . . General News . . 274
. . . Field Report . . 284
. . . Names . . 327

Departments...

Letters . . 82
Editorial . . 103
Talking Shop . . 273

contents for January 27, 1958

VOLUME 102, No. 2

1958 PRODUCTION PREVIEW

Our 45th annual summary of new equipment for Metalworking

Machine Tools and Attachments 106
Turning 106
Boring 112
Planing and Shaping 115
Drilling 116
Broaching 121
Tapping and Threading 122
Milling 124
Electrical Discharge, Ultrasonic 129
Gear Cutting and Finishing 130
Grinding, Honing, Lapping 133
Cutoff and Filing 142
Special Machines 146
Automatic Machine Control 150
Tools and Accessories 153
Forming, Forging, Casting 179
Welding and Assembly 202
Heating and Heat Treating 213
Cleaning and Finishing 217
Inspection and Layout 223
Plant Service Equipment 234
Parts and Materials 250

Puerto Rico—What's Down There for US Metalworking? . . . Most complete on-the-spot report ever published on why your company can, (or can't) set up a profitable branch plant there. *By Robert Sheets.* **284**

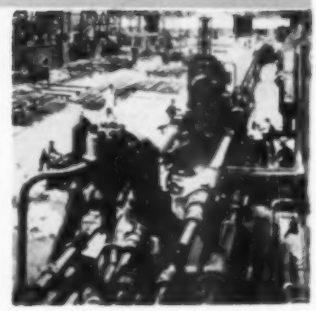
REFERENCE BOOK SHEETS

Calibration of gage blocks I, II . . . How to check them in your own plant. *By R E Roeger, Cleveland Instrument Co.* **267**

Drawing limit without pad . . . A curve that shows when you need a pad. *By Bernard Bao, R Krasberg & Sons Mfg Co.* **271**

American Machinist chips

Equipment Guide . . . This is our 45th Annual guide to new production equipment. In 160 pages, Assistant Editor Jack Dwyer has packed capsule descriptions of the 2200 items of new equipment described in the pages of *American Machinist* during 1957. The classified arrangement make it an ideal year-long reference to use in combination with the 1958 Planbook and Buyer's Guide Issue.



TV Masterpiece . . . Television is rumoured to be a rival of the printed word. But we saw a television program recently with a real message for the production man. This message is so important, and so well expressed, that we print it on page 273.

Island Metalworking . . . In the Commonwealth of Puerto Rico, there has been a program known as "Operation Bootstrap." The aim is to build up the Island's industry. Recently the program marked its 500th milestone—500 new plants built by US firms. Much of this expansion has been in Metalworking. To find out why US Metalworking expands to Puerto Rico, and how it is working out, News Editor Robert Sheets spent ten days there recently. He visited many plants, talked with Island officials, plant managers, workers. You'll find his report on the good and bad on page 284.

Coming . . . *AM* for Feb 10 will describe a simpler way to find the most efficient machining method. There will be articles on gearing for high-temperature applications, details on hot roll-forming titanium strip, reports on optical tooling, shaping honeycomb, conveyors, and induction heating practice in Russia.

JACK DWYER, assistant editor, received his mechanical engineering degree from Stevens Institute of Technology in 1952. He worked in the natural gas fields of West Virginia and then spent two years of military service and one year of civil service in an engineering research group of the Chemical Corps. After a year at Penn State's Mineral Industries School, Jack joined the McGraw-Hill editorial training program. He became New Equipment editor of American Machinist just over a year ago.

Cover . . .

The extrusion press at the Hereford (England) Works of the International Nickel Co. Painting by Terence Cuneo (*AM*—Jan 28 '57, p2)

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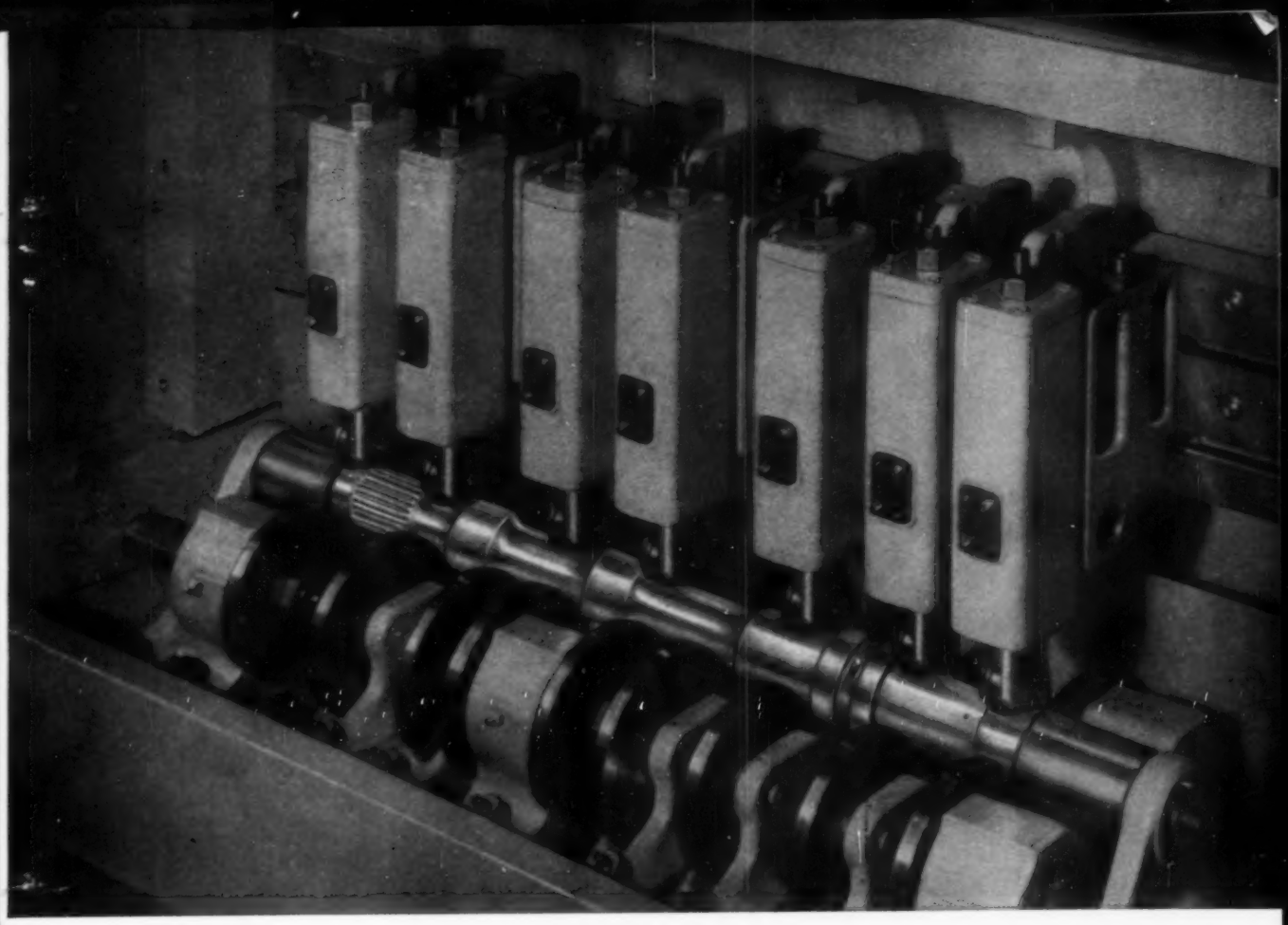


How to eliminate *your* shaft distortion problems

Distortion during hardening is a major production problem.

The Gleason No. 140 Rolling Quench Machine corrects this difficulty, because the quenching and straightening operations are performed at the same time. Because cold straightening is eliminated, valuable production time and expense are saved, and the quenched parts have less residual stress.

Shafts cannot distort because they are rolled under pressure throughout the quenching operation. The operator puts the hot part on the lower rollers and starts the machine. From there on, the quenching operation is automatic. Rolling speed, pressure, and oil flow are pre-set to suit the work that is being quenched.

The automatic quenching cycle saves operator time, and gives *uniform* results for all parts quenched. The pre-set metallurgically correct oil flow gives uniform hardness.

The Gleason No. 140 Rolling Quench Machine is equally suited for small or large quantities. It accommodates shafts $\frac{9}{16}$" to 4" in diameter, 6" to 40" in length, with integral cams or shoulders up to 8" diameter. Tooling can be arranged to hold parts on diameters or centers. Unusual shapes can be handled with additional tooling. Write for further information.

The Gleason No. 140 Rolling Quench Machine also handles multiple quenching of short shafts.

GLEASON WORKS

Builders of bevel gear machinery for over 90 years

1000 UNIVERSITY AVE., ROCHESTER 3, N.Y.

YOU'LL NEVER RUN OUT

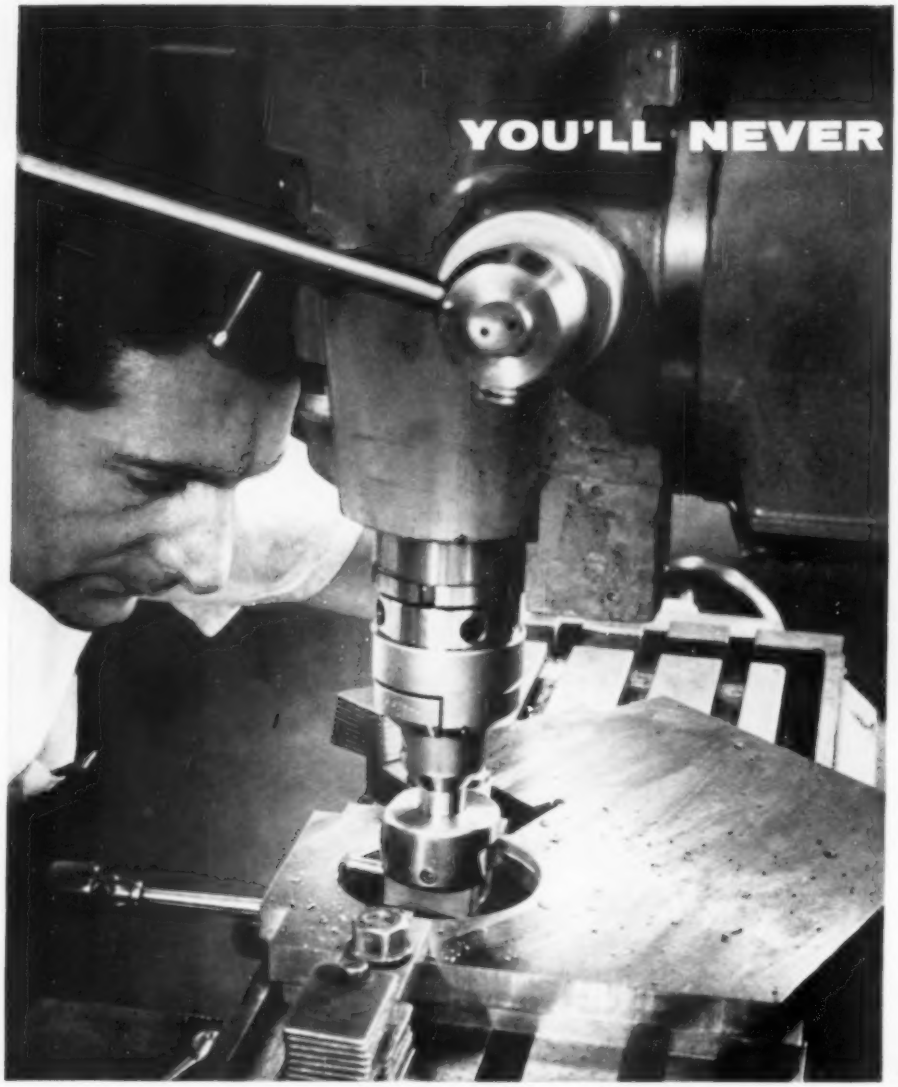
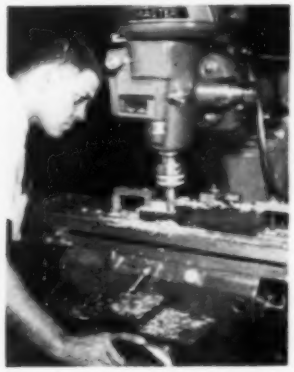
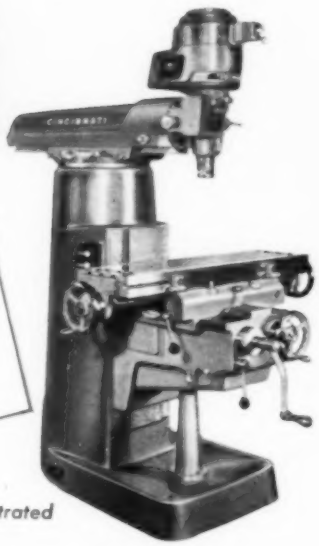


Photo courtesy Scottish Tool, Die and Metal Products Co., Cleveland 13, Ohio

Boring accurate holes is one of the many operations performed at low cost on the No. 1B Toolmaster.



Heavier cuts can be taken in one bite on the new Toolmaster Milling Machine. In this illustration a heavy cut taxing the full hp of the motor progresses smoothly.



CINCINNATI TOOLMASTER MILLING MACHINE

Three styles available:
1A, ¾ or 1 hp drive, manual feed to quill
1B, ¾ or 1 hp drive, power feed to quill
1C, 2 hp drive, heavy duty head

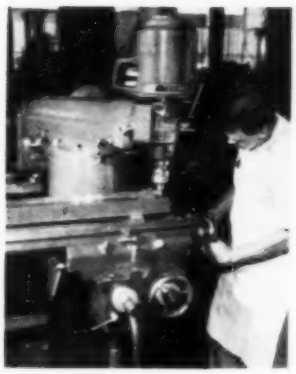
Style 1B is illustrated

CINCINNATI®

MILLING MACHINES • BROACHING MACHINES • CUTTER
METAL FORMING MACHINES • HARDENING MACHINES

OF WORK FOR A

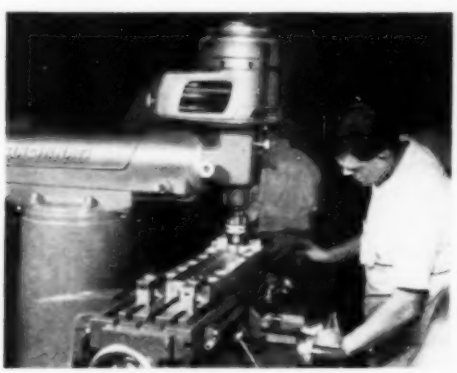
CINCINNATI Toolmaster



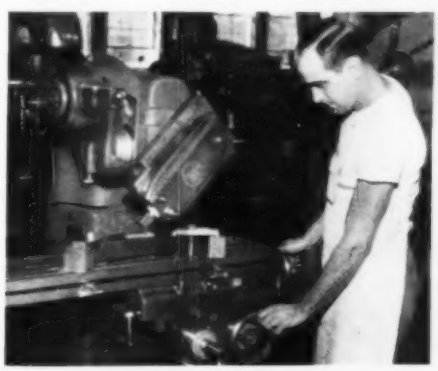
Maximum range setups on the new Toolmaster do not reduce rigidity. The cutting action is just as smooth for this long reach job as for any other.

If there's work in the shop, a Toolmaster can do it. More and more tool and die shops are finding that these machines can handle an exceptionally wide variety of light duty vertical and angular milling operations, and drilling, boring and shaping operations as well. There are many reasons why Toolmaster is the machine favored for work within one or two hp classification: the knee is extra wide and square gibbed; graduated dials are the kind operators like, large and easy to read; an anti-backlash device on the table feed screw smooths out the cutting action; oil-shot lubrication extends the productive life span of the machine; electrical controls are built-in; a variety of attachments is available, including an 8" Index Head, built to Cincinnati's fine Dividing Head standards.

You will be highly pleased with Toolmaster performance; their low price tag; the big-machine features. Would you like to have more information? Just ask for a copy of our attractive Toolmaster catalog, No. M-1870-4. Brief specs in Sweet's Machine Tool File.



Smooth, accurate manual feed is a big help in milling the inside of box-shaped sections on the Toolmaster. The operator can readily work with two hands on the controls while watching the cutter.



Shaping Attachment adds shaping operations to the variety of milling jobs handled by these machines. The illustration shows how angular surfaces are shaped.

AND TOOL GRINDERS • SPECIAL MACHINE TOOLS
CUTTING FLUID • GRINDING WHEELS

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO

FELLOWS GEAR CUTTING

GEAR SHAPERS

SPUR AND HELICAL	EXTERNAL & INTERNAL	MAX. PITCH DIAMETER	MAX. DIAMETRAL PITCH	MAX. FACE WIDTH	MAX. STROKES PER MIN.
3" FINE-PITCH					
both	yes	3 inches ext. 2 inches int.	40 steel, 30 brass	3/4"	2000
No. 4GS					
both	yes	6 inches	5/7 spur, 6 hel.	2"	635
7-TYPE*					
both	yes	7" spur, 6 1/2" hel.	6 spur, 6/8 hel.	1 1/2" ext., 1" int.	450
7A-TYPE					
both	yes	7" spur, 7" hel.	5/7 spur, 6 hel.	2" ext., 1½" int.	450
No. 10 ROTARY					
both	yes	12 inches	3/4 spur, 5/7 hel.	3" ext., 3" int.	500
6A-TYPE					
both	yes	18 inches	3/4 spur, 5/7 hel.	5" ext., 3" int.	300
No. 12GS					
both	yes	12 inches	3/4 spur, 5/7 hel.	4" ext., 4" int.	550
36-TYPE					
both	yes	36 inches	3 spur, 4/5 hel.	6" ext., 6" int.	300
120-INCH					
both	yes	120 inches	2 spur, 4 hel.	8" ext., 8" int.	148

*Max. P.D. internal—5 1/2"

GEAR HOBBER

NO. 12 GH2 HELIGUIDE

Spur and Helical, Max. O.D. 12". Max. face width, spur, 6"; helical, depends on helix angle and diameter. Max. diametral pitch 4. Hob speeds 123 to 430 R.P.M.

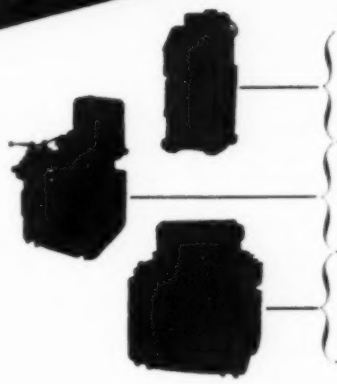
Fellows also builds special-purpose machines for production of gears and other related items. Descriptive literature, technical data and price information is available on all types of equipment shown. Contact the nearest Fellows office.

THE PRECISION LINE

Fellows

PRODUCTION EQUIPMENT

FINISHING



SHAVING MACHINES

SPUR AND HELICAL	EXTERNAL & INTERNAL	MAX. PITCH DIAMETER	MAX. DIAMETRAL PITCH	MAX. FACE WIDTH	MAX. SPREAD OF CENTERS
		No. 4 FINE-PITCH			
both	ext. only	4 inches	20	1 inch	12 inches
		No. 8 "FULL-TOOL"			
both	yes	8 inches	4	2 1/2 inches	**
		No. 11 INTERNAL			
both	int. only	***	6	1 1/2" up to 10P; 1", 12 to 16P	***

Also 12", 18" and 24" machines for externals only.

**Depends upon work-holding fixture

***Depends upon design of gear

INSPECTION

FOR COMPOSITE CHECK

INVOLUTE PROFILE CHECK

CHECKING LEAD CROWN & TAPER

SPUR AND HELICAL	EXTERNAL & INTERNAL	MAX. PITCH DIAMETER
No. 4 FINE-PITCH RED LINER		
both	yes	4 inches
No. 8M RED LINER		
both	yes	***
No. 20M RED LINER		
both	yes	18 inches
No. 12M INVOLUTE MEASURING		
both	yes	12 inches
No. 12H LEAD MEASURING		
both	yes	12 inches

Nos. 24M Involute and 24H Lead Measuring Instruments with capacity of 24 inches

***Depends upon design of gear

Fellows Injection Molding Machines

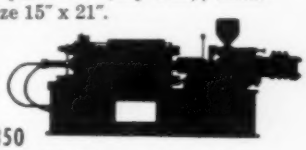
In each of three capacity ranges, Fellows plastic molding machines are your key to extra profit through high-speed, reject-free, fully automatic operation.

MODEL 3—125

3 oz. capacity, 45 pounds per hour, 600—840 cycles per hour (dry run), maximum mold size 12" x 17".

MODEL 6—200

6—9 oz. capacity, 75 pounds per hour, 490—650 cycles per hour (dry run), maximum mold size 15" x 21".



MODEL 12—350

12—20 oz. capacity, 150 pounds per hour, 700 cycles per hour (dry run), maximum mold size 20" x 31½".

Gear Production Equipment

THE FELLOWS GEAR SHAPER COMPANY,
78 River Street, Springfield, Vermont.
Branch Offices: 1048 No. Woodward Ave., Royal Oak, Mich.
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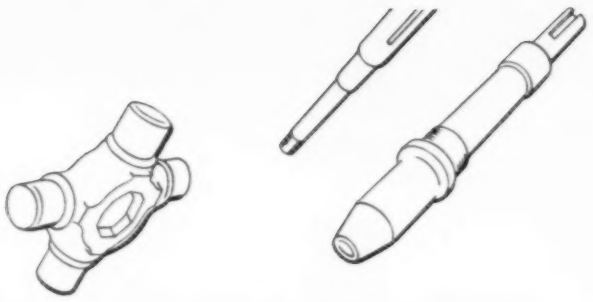
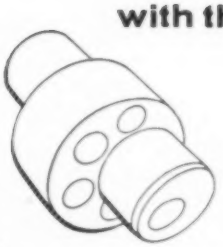


Now you can

Precision Grind Like These...

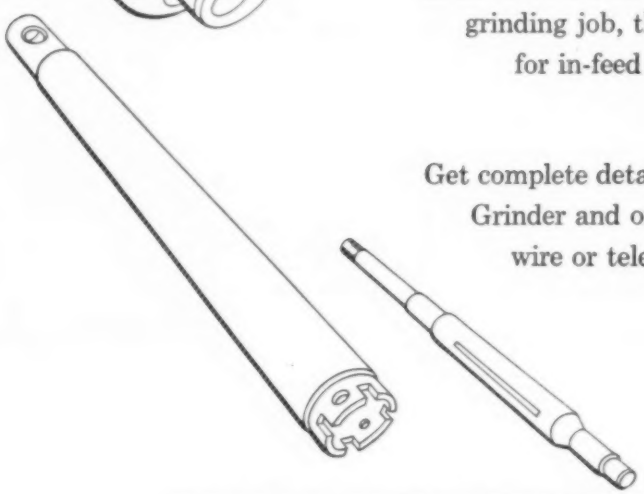
Economically, Rapidly, To Close Tolerances

with the new Van Norman 2C Centerless Grinder



This rugged Van Norman 2C centerless actually gives you the workability of three centerless grinders with a minimum of changeover time. Featuring a 15 HP main drive motor which gives you enough HP for every grinding job, the 2C is equipped for thru-feed work, for in-feed and, with crush dressing attachment, form grinding and profile work.

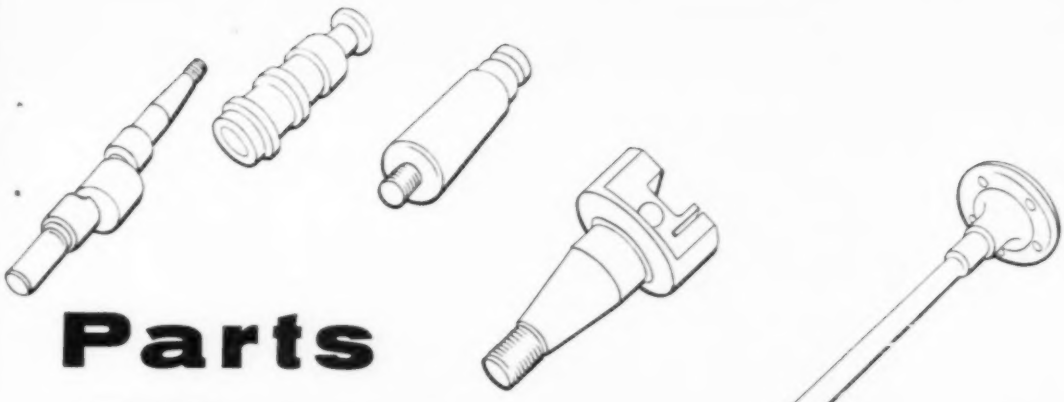
Get complete details on the Van Norman 2C Centerless Grinder and on other Van Norman grinders. Write, wire or telephone today for descriptive catalogs.



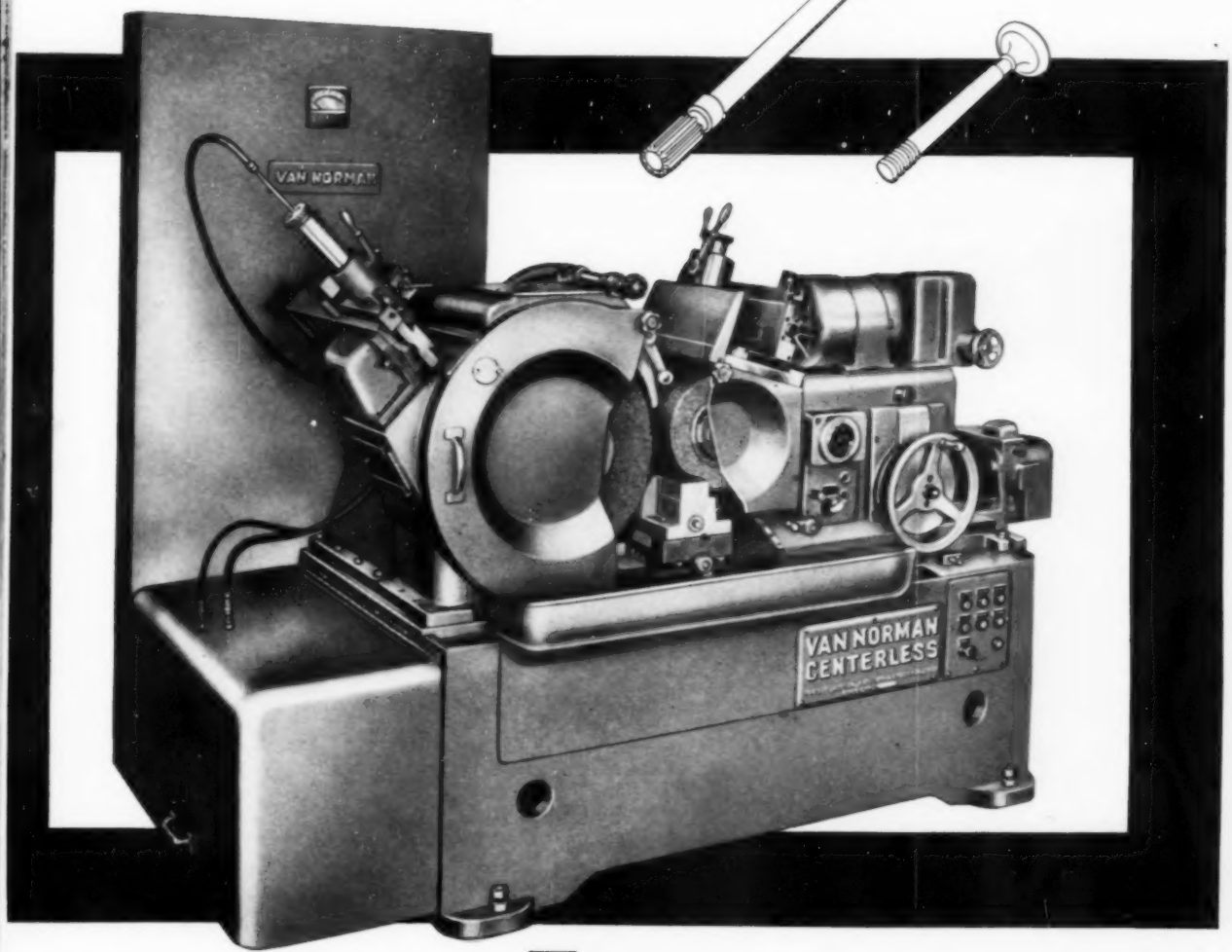
VAN NORMAN MACHINE

A DIVISION OF VAN NORMAN INDUSTRIES, INC.

MANUFACTURERS OF — Ram and Column Type Milling Machines, Cylindrical Grinders, Spline and Gear Grinders, Oscillating Radius Grinders, Special Production Grinders, Centerless Grinders.



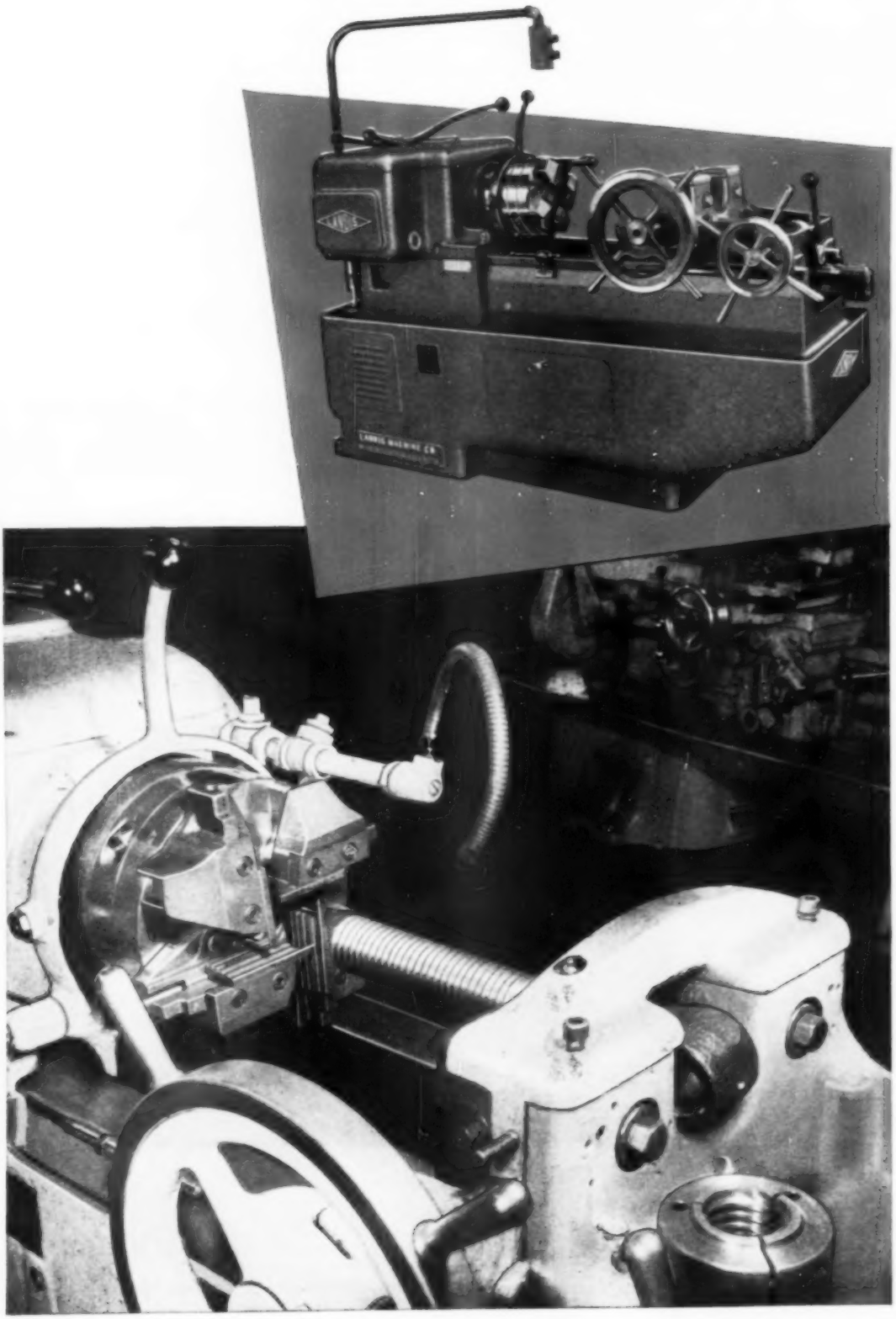
Parts



COMPANY

SPRINGFIELD 7, MASSACHUSETTS

Don't wait . . . for extra profits install a Van Norman machine now! They're available on many purchase plans . . . outright sale . . . purchase on conditional sales contract up to five years . . . pay as you depreciate up to 10 years . . . conditional sales contracts not available to Export.



461-C -2

coarse threads

cut in one pass with LANDMACO machines

The cutting of large diameter Acme threads at the Iowa Manufacturing Co. of Cedar Rapids, Iowa, illustrates the heavy duty threading possible on LANDMACO Threading Machines.

1045 steel forgings of 20-29 Rockwell C are used in the production of adjusting screws for construction equipment. 2¼"-3 pitch Special Acme threads (EXTRA DEEP) are cut 10" long, with a .026 pitch diameter tolerance and a .001 per inch allowable lead error.

Cutting at a speed of 7.6 surface feet per minute, 12.5 pieces are completed per hour. This includes 100% gaging on the machine, using go-and-no-go gages. Despite the large amount of metal removal, at least 80 pieces are produced between chaser grinds.

This job is an excellent example how such heavy-duty threading can be done with the LANDMACO Machine. The 2½" Single Spindle Machine (½" to 2½" range) used here features heavy construction, hardened-and-ground ways, lead screw attachment, and is equipped with a rugged LANCO Tangential Chaser Die Head. Roughing-and-Finishing Centering Throat Chasers produce heavy cuts in one pass of excellent finish, eliminate the out-of-roundness common in long heavy workpieces, and provide low tool cost.

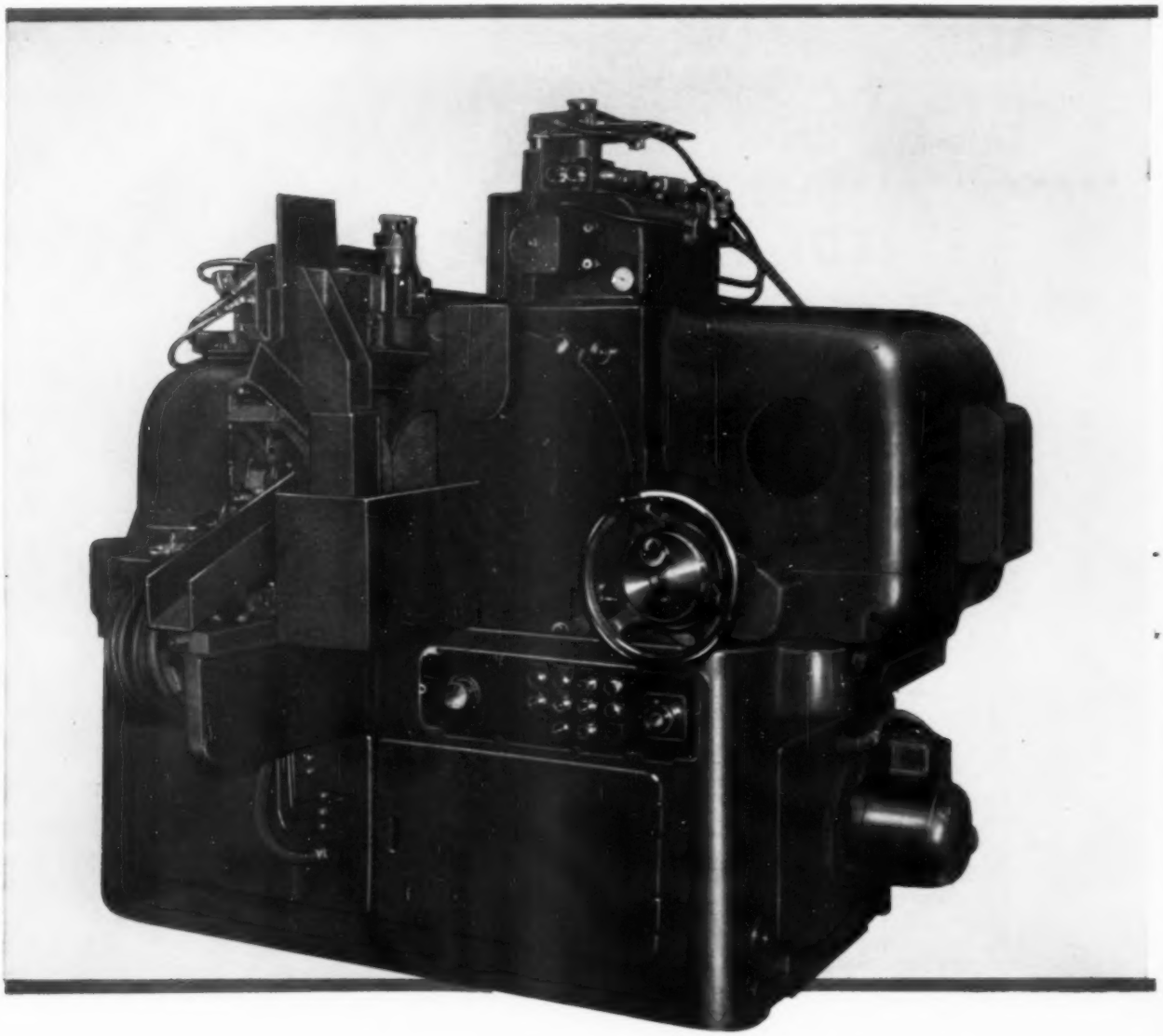
LANDMACO Machines offer precision and heavy duty threading within a range of #4 to 4" in diameter. For more detailed information, please send specifications when writing.

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT - CUTTING - TAPPING - GRINDING - ROLLING

LANDIS Machine COMPANY WAYNESBORO PENNSYLVANIA

Landis Centerless with automatic

. . . form grinds file blanks from straight stock;



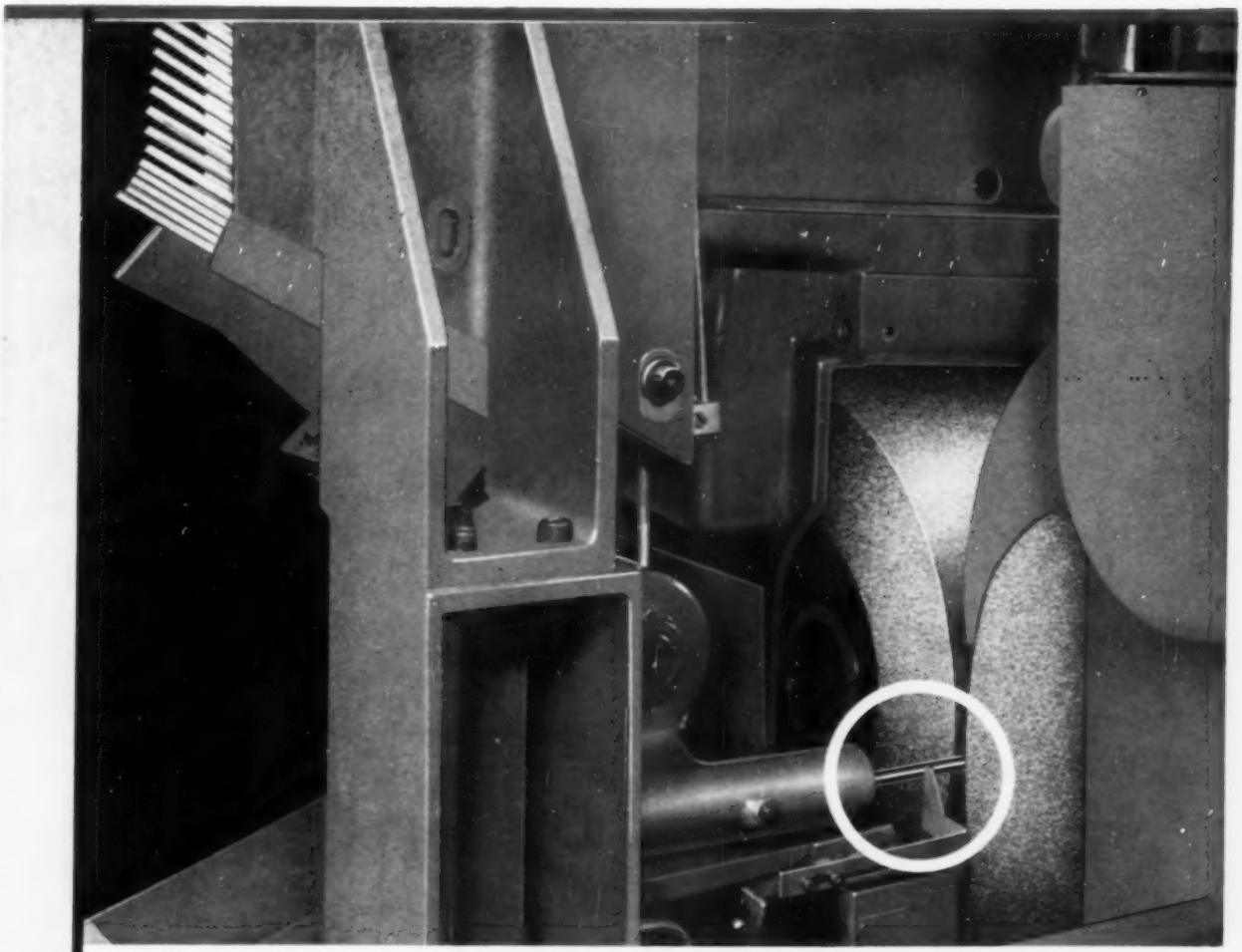
Machine:	Landis No. 12½ Centerless Grinder
Part:	Five sizes of round files —high carbon steel
Operation:	Grinding from straight cylindrical blanks
Tooling:	Automatic loading and unloading
Size limit:	± .003"
Production:	288 to 382 per hour —depending on size of file

LANDIS
precision grinders

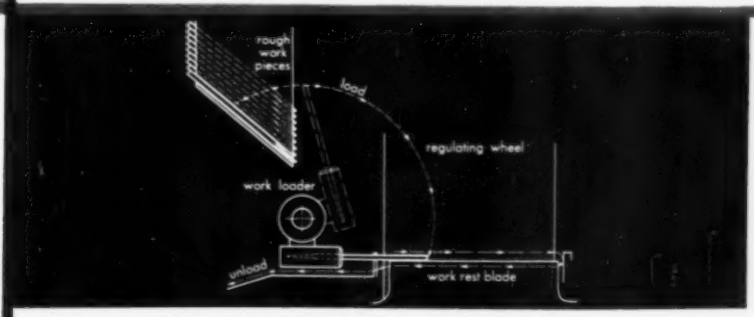
LANDIS TOOL COMPANY / WAYNESBORO, PENNSYLVANIA

loader boosts production 144%

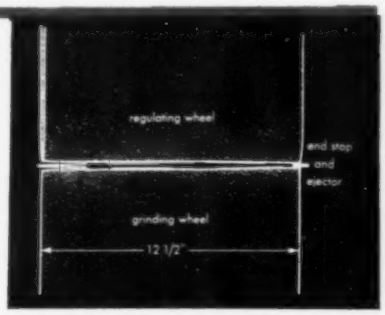
eliminates extra operations formerly required



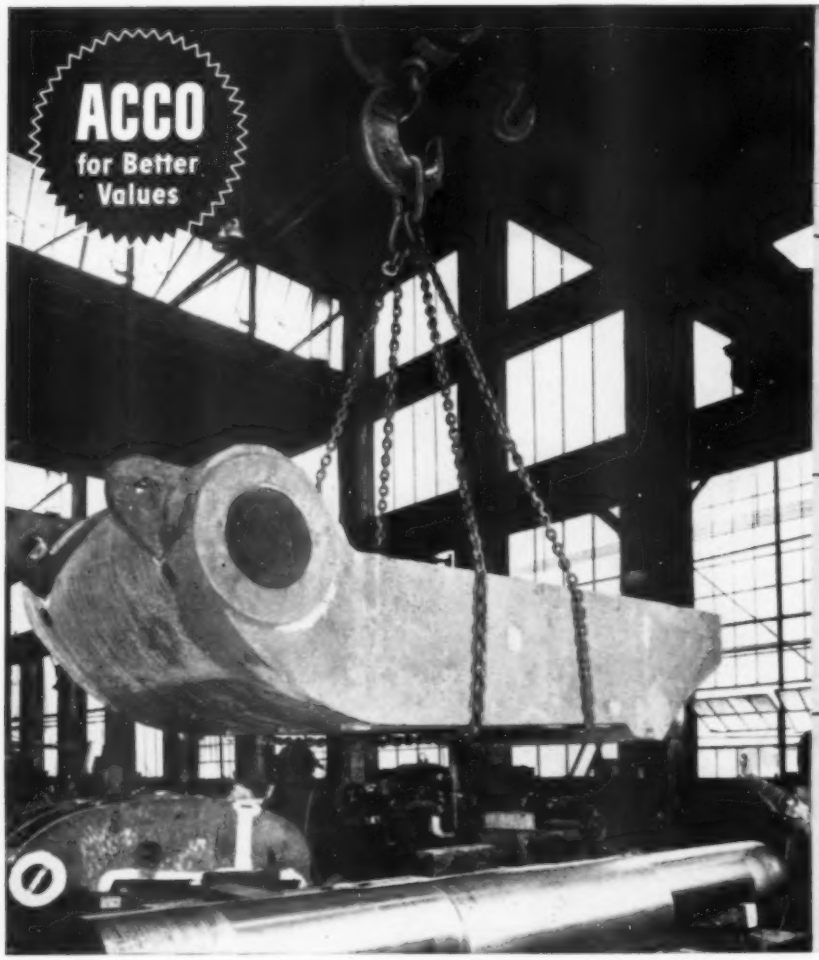
LANDIS tooling engineered for this application provides automatic loading, cycling and discharge for considerable savings in time and costs. Photo shows workpiece during loading. This is followed by automatic grinding cycle and automatic discharge.



Automatic load and grind. Transfer arm takes workpiece from loading chute and places it between formed grinding and regulating wheels.



Using the end feed method, the file blank is ground to size. It trips the ejector at the positive stop.



Accoloy X-weld 125 Chain
Pat. No. 2763768

New Shaped Master Link

ACCO Registration Ring

Registration Certificate

Big, costly loads are safe with Acco Registered® Sling Chains

• Pictured above is a huge, 35,000-pound casting being lifted *easily and safely* by a 4-leg ACCO *Registered* Sling Chain. Directly beneath the load is a highly polished and machined crank shaft worth many thousands of dollars.

Imagine the cost in lost labor and materials, should the sling chain fail! But it won't fail—for this ACCO *Registered* Sling Chain and all its components have the inbuilt strength needed to handle the job with complete safety!

When you buy an ACCO *Registered* Sling Chain, you get these four exclusive "plus values" which *add materially to the worth, but not to the cost*, of the sling:

1 • **Accoloy X-weld 125 Chain**, for extra strength. This chain hangs straight . . . does not kink . . . has extra resistance to bending.

2 • **New Shaped Master Link**, uniquely shaped to withstand deformation under loads up to 18% greater than a round-section link can do.

3 • **ACCO Registration Ring**, serially numbered as evidence that the assembled sling has been factory proof-tested to twice its working load limit.

4 • **Registration Certificate**, signed by us, attesting to the field-tested design and proof-testing of the complete sling.

Remember, the best sling is one of your most economical material-handling tools. You'll find it good business to consult your ACCO *Registered* Sling Chain Distributor on all your sling needs; his counsel is available without obligation. If you don't know his name, write us at York, Pa.

WHAT "ACCO REGISTERED" MEANS

1 The best material
2 Unit safety factor (on bodies, rings, links, hooks)
3 Proof test of complete sling to twice the working load limit
4 Actual field service test of each design
5 Metal identification ring on each sling
6 Signed Registry Certificate with each sling

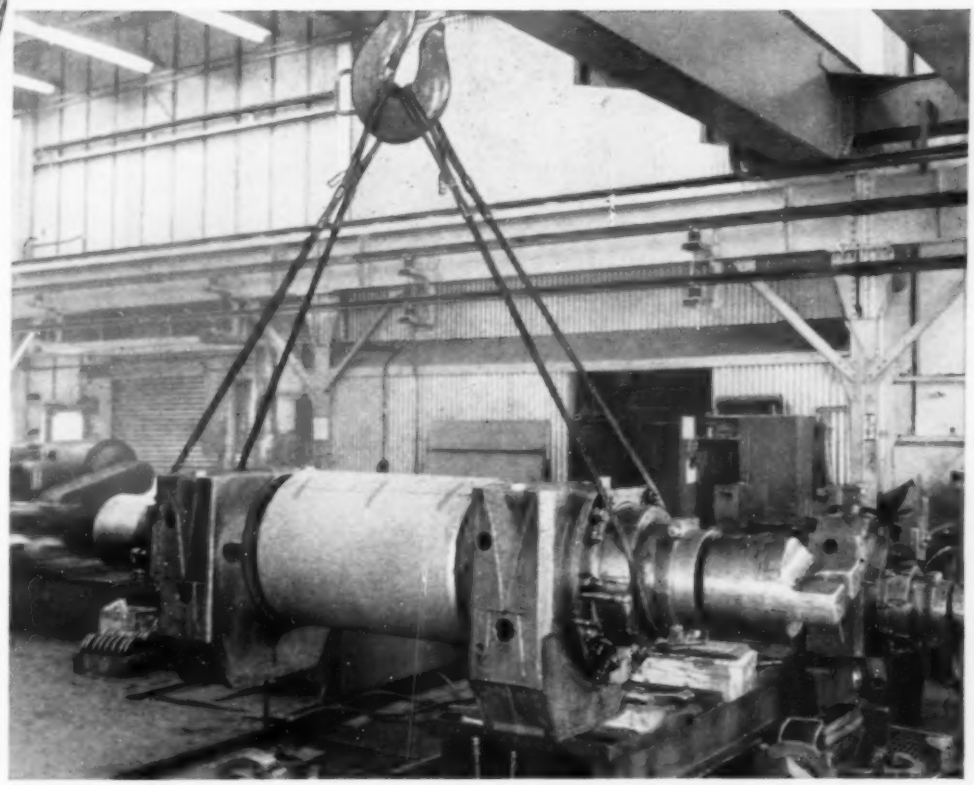
American Chain Division
AMERICAN CHAIN & CABLE
Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco

*Indicates Warehouse Stocks

ACCO
TRADE MARK

ACCO Registered® Wire Rope Slings



It Takes More than Strong Slings to Make this Lift Safe!

• Behind the scenes of an important lifting operation like this is a key member of the production team—the rigger. Many times a day he sets up and supervises the moving of finished products or major assemblies worth thousands of dollars. He carries a heavy responsibility in the success or failure of any production operation.

Because the productive role of your rigger is such a vital one, make certain that he has precision-made tools to do his job, just like any other skilled worker in your plant. And where wire rope slings are concerned, this means ACCO *Registered* Wire Rope Slings.

Each ACCO sling has the engineered accuracy, the proved strength and safety that you find only in quality-made tools. ACCO *Registered* Slings' DUALOC endings—the modern patented endings double-locked for double safety—give evidence of the many superiorities of these great slings. See box at right for other features.

FREE 52-Page Catalog No. 9 — contains helpful information about strengths, weights, dimensions—also prices—of ACCO *Registered* Wire Rope Slings. Write our Wilkes-Barre office today for your copy.

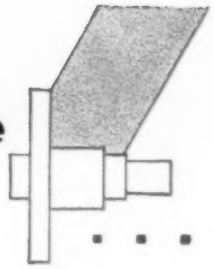
WHAT "ACCO REGISTERED" MEANS

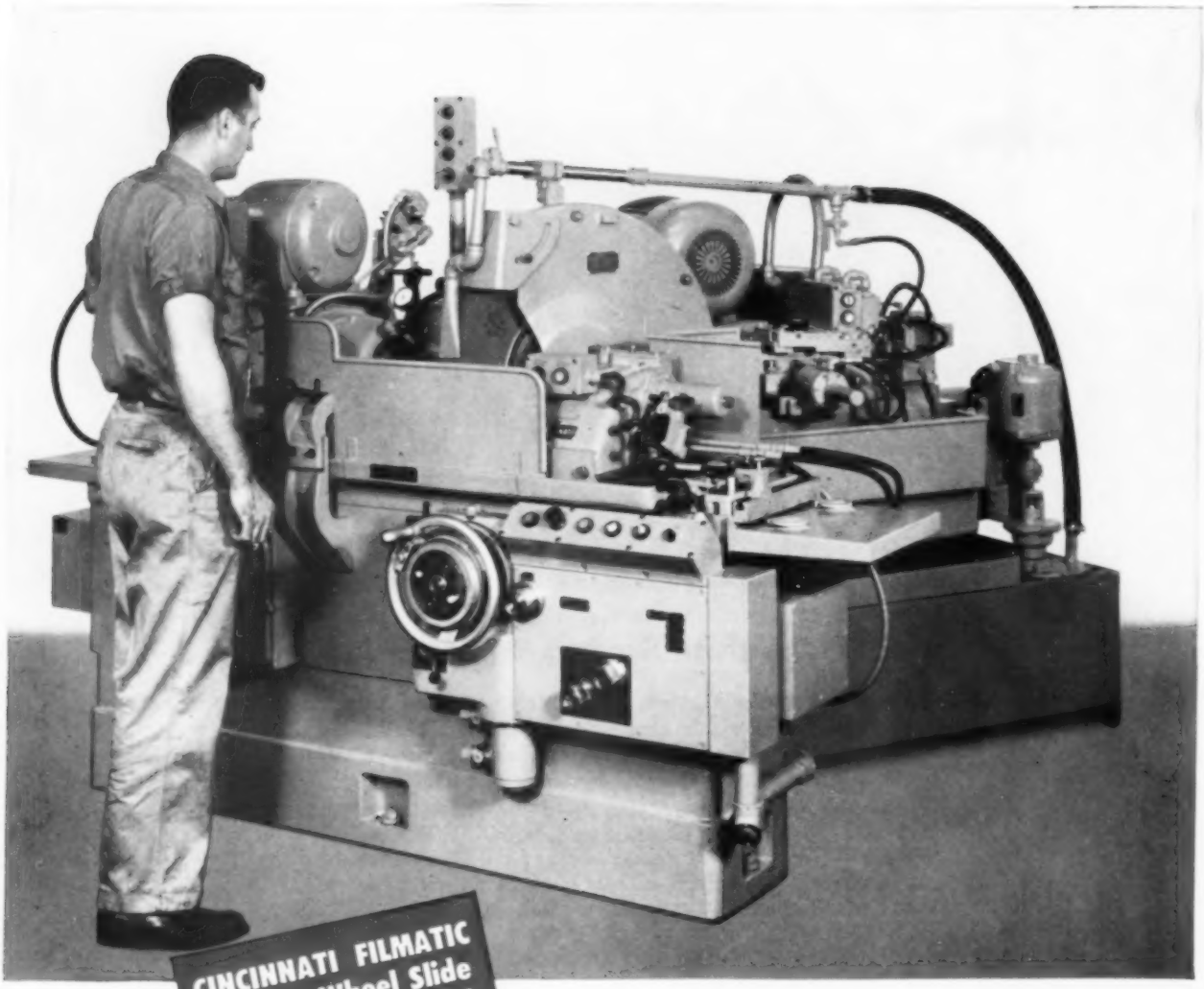
1. The best material
2. Unit safety factor (on bodies, rings, links, hooks)
3. Proof test of complete sling to twice the working load limit
4. Actual field service test of each design
5. Metal identification tag on each sling
6. Signed Registry Certificate with each sling

AMERICAN CHAIN & CABLE COMPANY, INC.
WIRE ROPE SLING DEPARTMENT

Wilkes-Barre, Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex.
Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.
In Canada • Dominion Chain Company Ltd., Niagara Falls, Ontario

It Pays to Combine





CINCINNATI FILMATIC Angular Wheel Slide GRINDING MACHINE

Diameters and adjacent radii and shoulders are precision ground in one operation on this CINCINNATI FILMATIC 10"R x 18" Angular Wheel Slide Grinder. Sizes available: 6"R and 10"L x 18" or 30" between centers; 10"R and 14"L x 18" to 72" between centers.

CINCINNATI

CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES • ROLL GRINDING MACHINES • SURFACE

Precision Grinding Operations

Especially on a CINCINNATI Built for the Job

Time, effort and dollars are saved when operations are combined. And quite often quality improves, just as it does when diameters and adjacent radii and shoulders are ground in one operation on CINCINNATI® FILMATIC Angular Wheel Slide Grinding Machines. These fine precision grinders are built for high production work at the lowest cost of any equipment available today. Many features contribute to this outstanding performance. Four are illustrated at the right. Others include:

Push-button automatic grinding cycle, incorporating coarse and fine feed rates for maximum production and high-quality finish.

Roll-out cutting fluid tank. Cuts down service attention.

***Automatic air-electric gage sizing** with cycle time stabilizer. High degree of accuracy and compensation for wheel wear obtained automatically.

***Automatic gap eliminator.** A timesaver where stock allowance varies widely.

***Behind-the-wheel profile truing equipment,** for automatic, accurate profile truing in both directions.

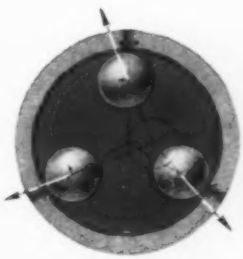
Additional features and their advantages are illustrated and described in catalog No. G-686. Everyone concerned with modern precision grinding methods and low costs should have a copy. May we hear from you? Meanwhile you might want to look at the brief specifications in Sweet's.

**Available at extra cost.*

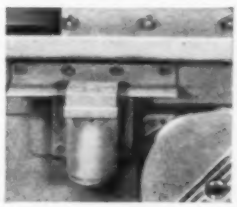
CINCINNATI GRINDERS INCORPORATED
CINCINNATI 9, OHIO

FILMATIC

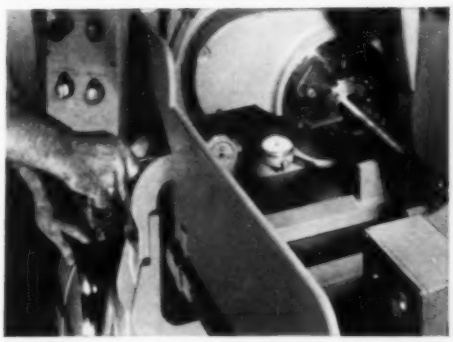
FILMATIC grinding wheel spindle bearings, exclusively CINCINNATI, have never been equalled by any other spindle bearing mounting.



Automatic grinding wheel balancing, an exclusive CINCINNATI feature, balances the wheel and mount within a few seconds.



Automatic hydraulic table clamp automatically locks the machine table in position during the grinding cycle.



Manual flagging device, for locating the work axially with respect to the wheels, is simple and accurate. Automatic flagging device is also available.

GRINDING MACHINES • CHUCKING GRINDERS • MICRO-CENTRIC GRINDING MACHINES • CENTERLESS LAPPING MACHINES

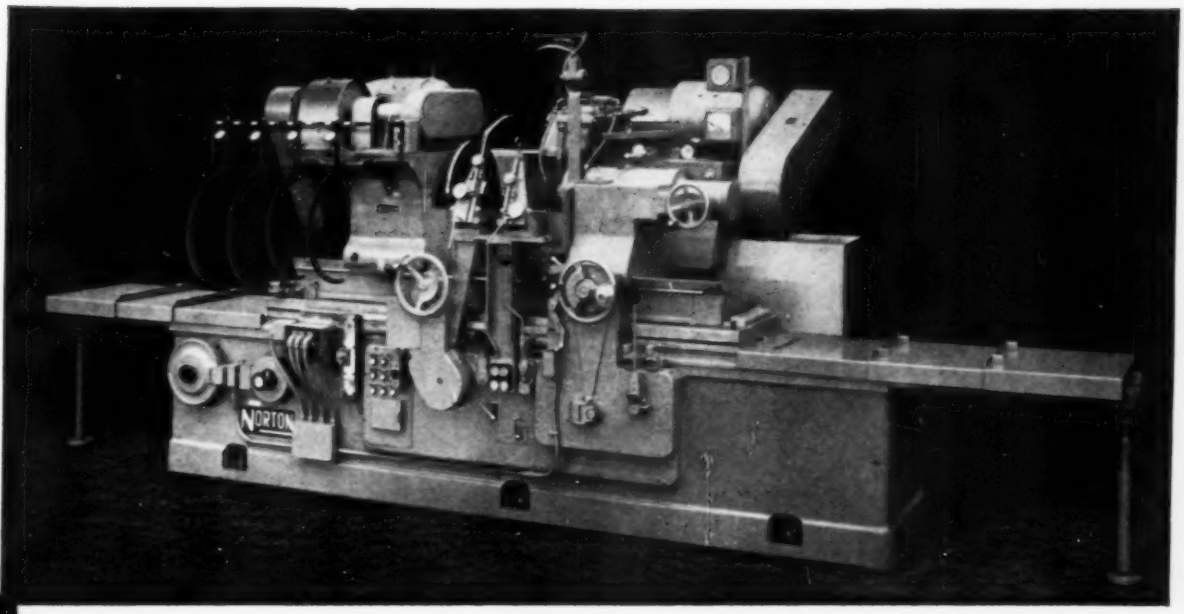
Newest Norton Grinder!...

The 30" Type LCTU Semiautomatic...

...a production-booster for grinding large-diameter parts...

a profit-booster for YOU

Every Feature For Fast, Accurate, Automatic Grinding of large-diameter, relatively light parts is built into the new Norton 30" Type LCTU Semiautomatic Cylindrical Grinder. It gives you the "Touch of Gold" by adding value to the parts it grinds and by increasing your production rate and profit margin. All controls are within easy reach of the operator and special job-easing equipment reduces his work and increases your production. This ultra-modern grinder is available in work lengths of 48" 72" and 96".



The new Norton 30″ Type LCTU Semiautomatic Cylindrical Grinder is expertly engineered to improve your grinding operations on ***large-diameter parts of relatively light weight.***

It does this by bringing you maximum speed, accuracy, operating ease and economy — typical Norton "Touch of Gold" advantages that mean top-quality, lowest cost production.

Advanced Features

- Automatic grinding cycle, under one-lever control, assures fast, consistent output and reduces operating effort. Electrically timed termination of the cycle can be shifted to manual control.
- Start-stop of work rotation and coolant flow controlled automatically with the grinding cycle or manually, as desired.
- The rugged wheel spindle and sturdy work supporting units combine with the precision wheel feed mechanism to produce fast die-out with exceptional repetitive accuracy in sizing.
- Pre-set speed control permits separate table speeds for truing and grinding as set from the first workpiece. Thereafter, either speed is instantly provided by moving the table control lever.
- All controls for feeds and speeds easily accessible from front of machine. Automatic or manual wheel feed settings speeded by "click-count" index, enabling settings for work diameter reduction in increments as fine as .0001″. Handy work jogging lever permits fractional rotation of the work for most convenient loading or inspection.

Many Accessories

are available to increase the efficiency of the 30″ Type LCTU for special jobs. Optional extras include locating devices, automatic wheel truing, automatic compensation of wheel head setting after truing and a lever-operated device for moving the grinding wheel into a shoulder to be ground.

To Meet Your Competition

Obsolete grinding equipment is a business risk. Why not get all the facts on how the new, highly advanced 30″ Type LCTU Grinder can aid in improving your competitive position? See your Norton Representative or write direct. And remember: only Norton offers you such long experience in both grinding machines and grinding wheels to help you produce more at lower cost. NORTON COMPANY, Machine Division, Worcester 6, Mass.

District Offices:
Worcester • Hartford • Cleveland • Chicago • Detroit
In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5

***To Economize, Modernize with* NEW**

NORTON

GRINDERS and LAPPERS

Making better products...to make your products better

NORTON PRODUCTS: Abrasives • Grinding Wheels
Grinding Machines • Refractories
BEHR-MANNING PRODUCTS: Coated Abrasives
Sharpening Stones • Behr-cat Tapes

HPM

DIVERSIFIED

TWO EXAMPLES OF THE NEW, BROADENED SCOPE OF METALWORKING PRESSES BY H-P-M

"Maintaining the high quality of Albion Malleable Iron Company castings is a job that has been entrusted to reliable H-P-Ms since 1937. Today, nine H-P-Ms are being utilized and with continuing dependability" . . . according to Mr. James De Vore, Plant Engineer.

Straightening castings calls for the careful application of force so that metal is allowed to flow slowly and without fracture. H-P-M metal straightening presses provide the control and the versatility for all metal forming techniques with ram speed, tonnage, and stroke adjustable instantly for all conditions. . . .

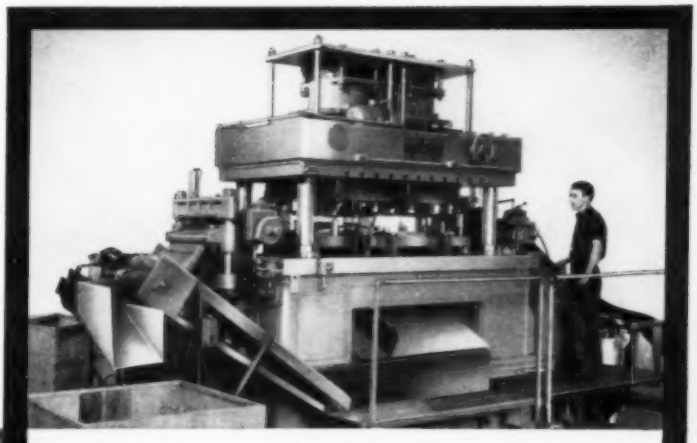
THE HYDRAULIC

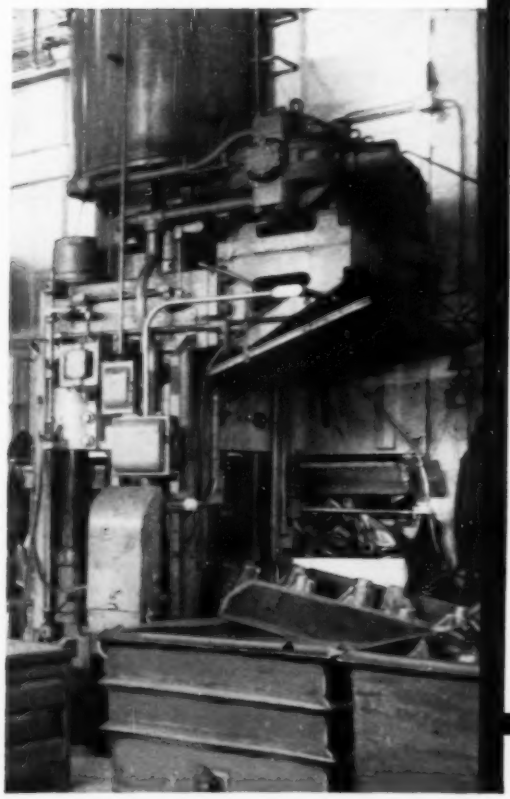
A DIVISION OF KOEHRING

AND DEPENDABLE

. . . Force may be applied to work smoothly and evenly to preadjusted tonnage limitations. H-P-Ms adapt to a multitude of requirements and are generally the busiest presses in the shop. H-P-M can now supply presses for almost every metal processing requirement — from 2 to 25,000 tons.

Send today for complete information . . . ask for Catalog 5600.





Henry and Wright Double Crank *"definitely improved our competitive position"*

Three or four conventional presses would have been required to produce this part, it is estimated by Emil Gaul, vice president of Grand Haven Stamped Products Co., Grand Haven, Michigan. Among the features he likes about the Double Crank are: unequalled flexibility afforded by the large bed area, rapidity of die change, inching control and safety devices.

"Definitely improved our competitive position," is the way Mr. Gaul sums up the performance of his Henry & Wrights. It's another and typical example of the successful use of the H & W Double Crank dieing machine—providing greater accuracy through two-point support of the cross head, lower center of gravity, pulling power instead of pushing, and versatility and set-up features you'll recognize immediately. They can improve productivity and work quality in your plant, too.

Want more information . . . send for our catalog.

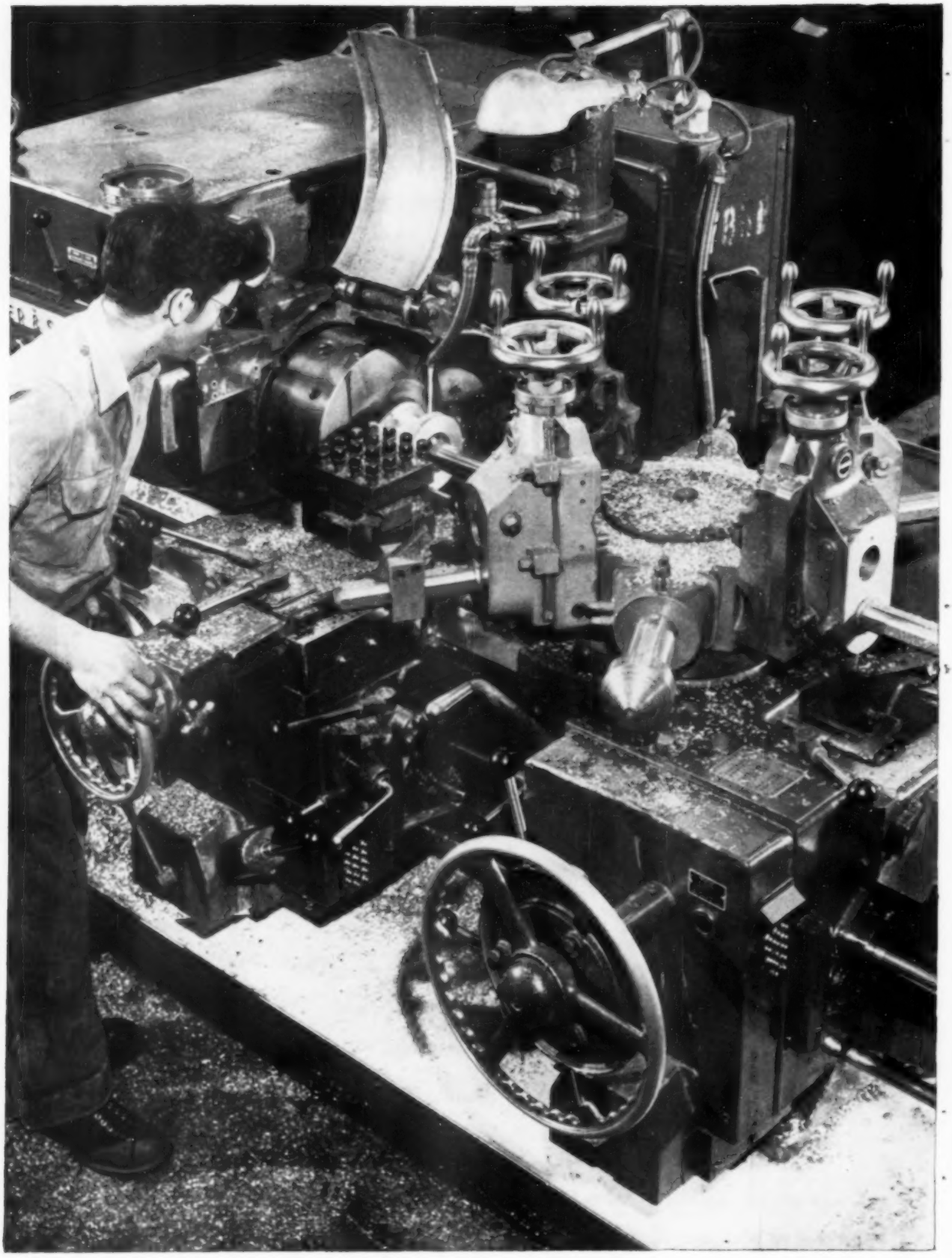
Henry and Wright
Built by H-P-M

H803

PRESS MFG. COMPANY

COMPANY • MOUNT GILEAD, OHIO, U.S.A.

HPM



WARNER & SWASEY 1-A

efficiently handles small lot brass work at Beloit Iron Works

GIANT, city-block-long paper making machines made by Beloit Iron Works, Beloit, Wisconsin, require hundreds of different precision machined parts—in extremely small lots. For much of their turning work, Beloit depends on a large battery of Warner & Swasey turret lathes, machines ideally suited to the different classes of small lot work they have.

The machine shown—a new Warner & Swasey 1-A Universal Extra Heavy Duty Turret Lathe—was selected to handle an especially critical turning problem. This involved the production of brass castings in lots less than 15 pieces, where the qualities of high speed and great power are required, in addition to extreme machine maneuverability. The new Warner & Swasey 1-A is designed to meet just such demands!

Its zoned operating controls put all machine controls within easy reach. Operators can quickly and easily set the cross slide, the hex turret unit, or position tools. The 1-A's all-clutch headstock permits instantaneous speed changing for fast, effortless headstock handling. And for threading or forming cuts, a 4 to 1 speed reduction can be obtained instantly without preselection merely by flipping the speed change lever in the opposite direction. The power chuck wrench further speeds handling time, cuts operator fatigue.

This machine is also equipped with longitudinal dials for setting lengths of cut, eliminating the setting of stops—another reduction of handling time on this small lot work.

A 30 hp, two-speed motor furnishes all the power necessary for high speed brass turning plus a range of 32 unduplicated cutting speeds from which the most efficient speed can be quickly obtained for every cut. Its rigidity and Vee-Way construction assure holding required accuracies of .001.

This 1-A, like the other Warner & Swaseys, has proved its efficiency for Beloit Iron Works because it is matched with the type and range of work for which it is designed. Our Field Representative will be glad to work with you to select the machine tools that will similarly best suit your needs.

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS...WITH A WARNER & SWASEY

This Bulletin....

(yours for the asking)

shows how to get

added threading production

from your present automatics •

drill presses • turret or

hand lathes • threading machines

or other metal turning equipment

at only a fraction of the cost of specialized equipment

ACME-FETTE Self-Opening Thread Rolling Heads and Rolls *installed on your present metal turning equipment* will make that equipment more versatile . . . more productive. And you will maintain closer control over threading quality and deliveries.

Acme-Fette Heads roll all parallel thread forms, at speeds equal to turning speeds with high speed steel tools — up to 5 times faster than conventional thread cutting — on all types of horizontal or vertical machines equipped with either rotating or stationary spindles.

If the job calls for threading from the end, you can't beat an Acme-Fette for speed, accuracy, surface smoothness, versatility, or long life.

Send for Bulletin NAF-57 today, and you'll get a new concept of what thread rolling — the ACME-FETTE way — can do for you.

See Acme-Fette Thread Rolling demonstrated at the A.S.T.E. Tool Show in Philadelphia May 1 - 8, Booth 2115.

National Acme

THE NATIONAL ACME COMPANY, 171 E. 131ST ST., CLEVELAND 8, OHIO • Sales Offices: Newark 2, N. J., Chicago 6, Ill., Detroit 27, Mich.

Twin magazine feeder DOUBLES PRODUCTION in straddle-broaching the tongues on both ends of this GEAR SHAFT

Equipment used . . . the LAPOINTE FABRICATED PRESS

BROACHING MACHINE

The Lapointe Vertical Broaching Press is extremely efficient anyway, but when it can be equipped with a twin magazine feeder you will obtain some amazing production figures. For instance: broaching these gear shafts at a rate of 10-per-minute . . . more than 600 per hour! It's accomplished by broaching two complete parts (one above the other) with each cycle of the fully-automatic machine.

Broached surfaces have a good finish, and dimensions are closely held on parts broached on this Lapointe Fabricated Press which is *specifically designed for precision broaching.* You get quality along with quantity — and that's the kind of production that is required for these gear shafts, in one of the country's biggest plants producing appliances and components.

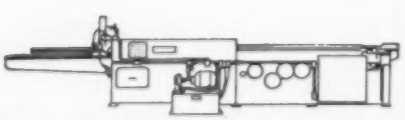
If you are now milling parts that should be broached — or machining any repetitive forms to close tolerances — you may be agreeably surprised to learn what you can save, *in cost and quality,* by conversion to Lapointe-Broaching. Why not ask a qualified Lapointe Field Engineer to come to see you?

THE LAPOINTE MACHINE TOOL COMPANY

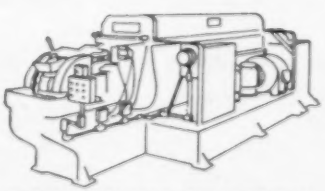
HUDSON, MASSACHUSETTS • U.S.A. *In England: Watford, Hertfordshire*

THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

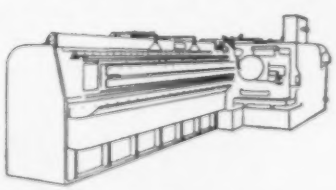
Here's a line of ELECTRO-MOTIVE DRIVE BROACHING MACHINES . . . . . available only at LAPOINTE



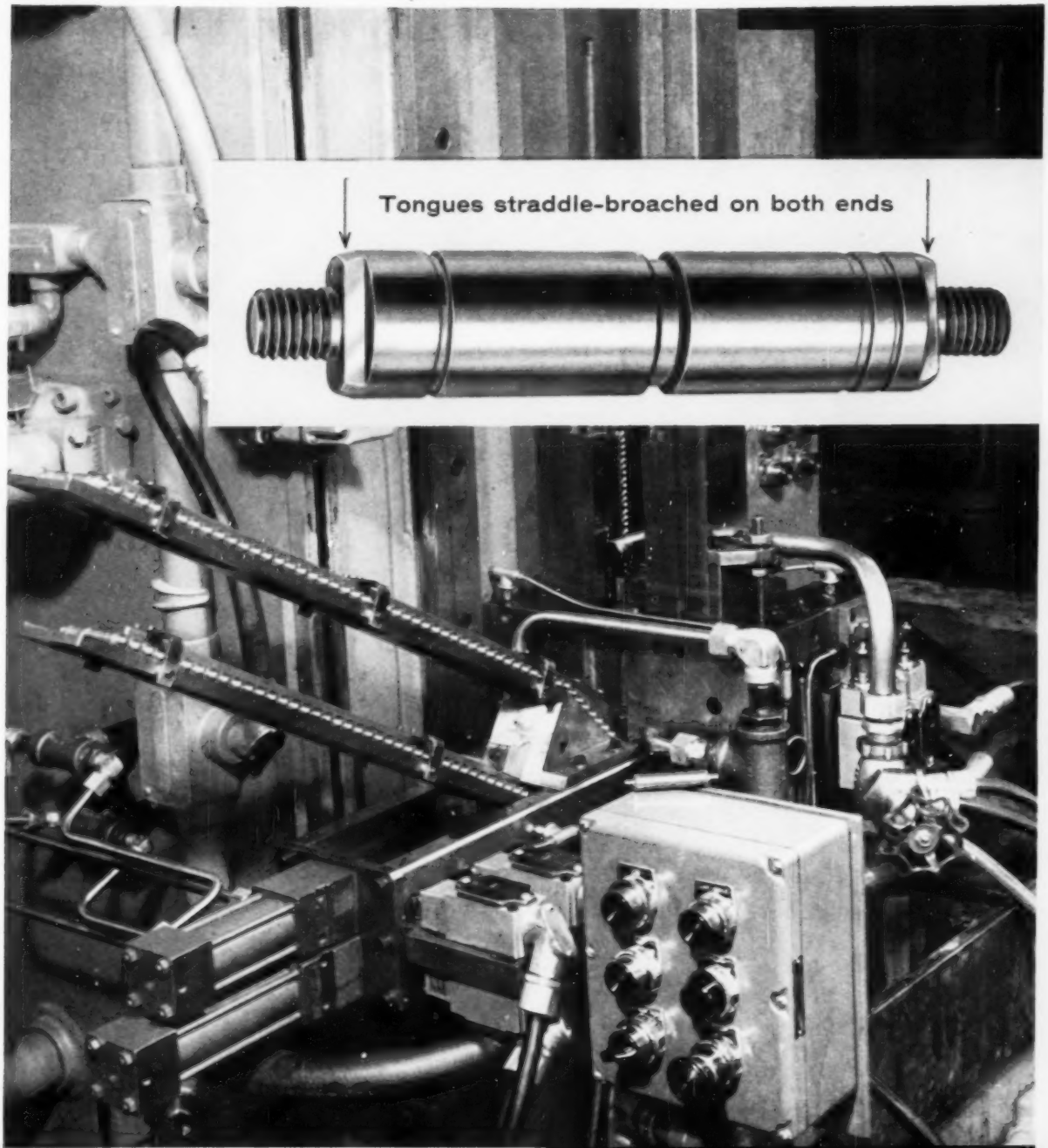
60" STROKE HORIZONTAL, ELECTRIC

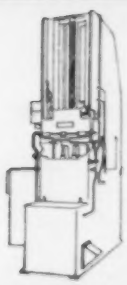


CH CONTINUOUS BROACHING, ELECTRIC

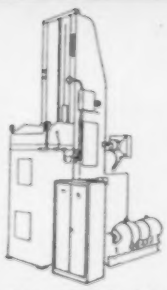


SRHE SINGLE RAM HORIZONTAL, ELECTRIC

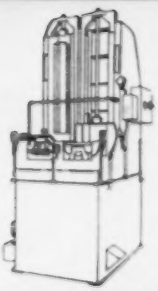




VUE-7 VERTICAL PULL-UP ELECTRIC



SRVE SINGLE RAM VERTICAL, ELECTRIC



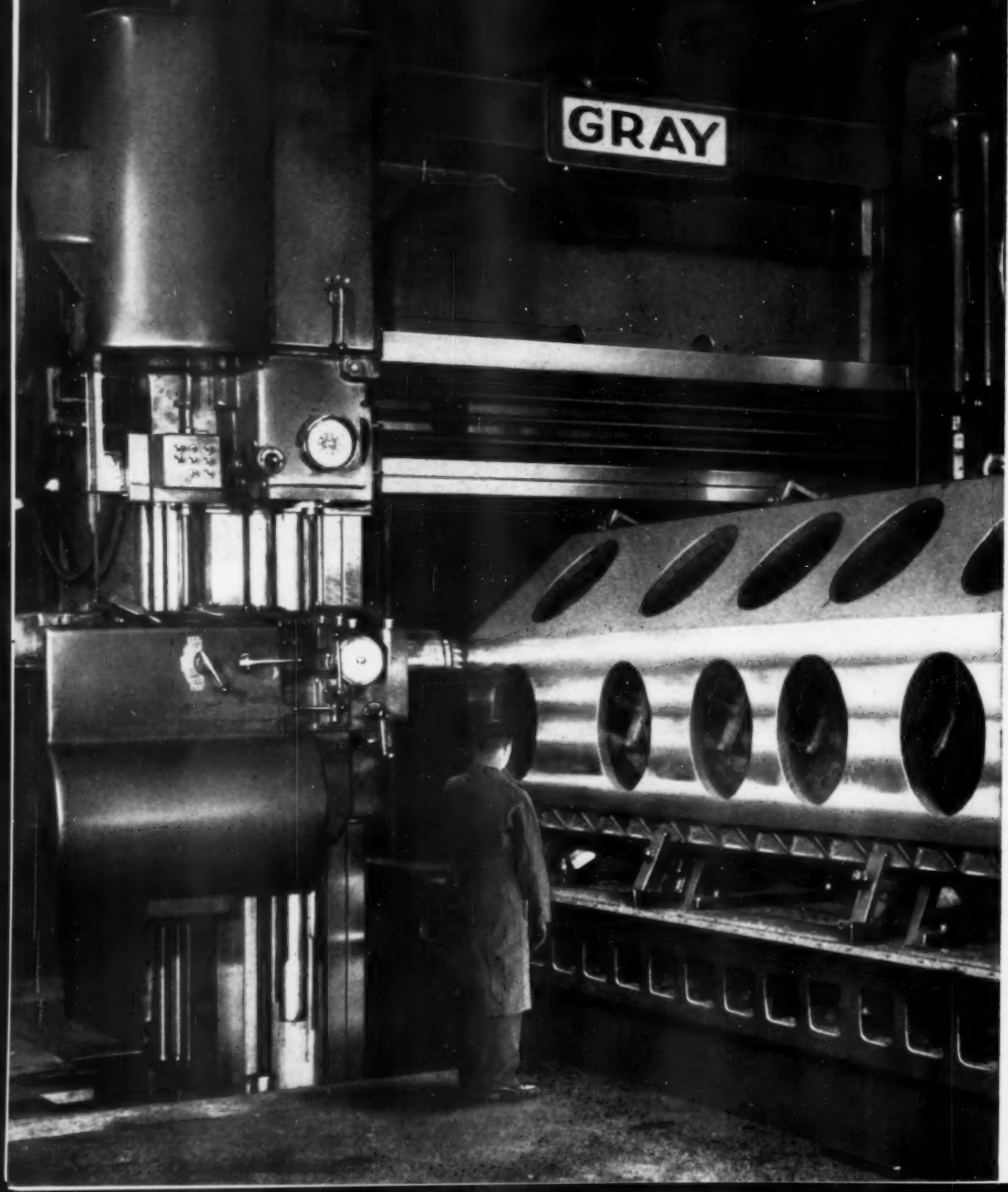
DRVE DOUBLE RAM VERTICAL, ELECTRIC

LAPOINTE

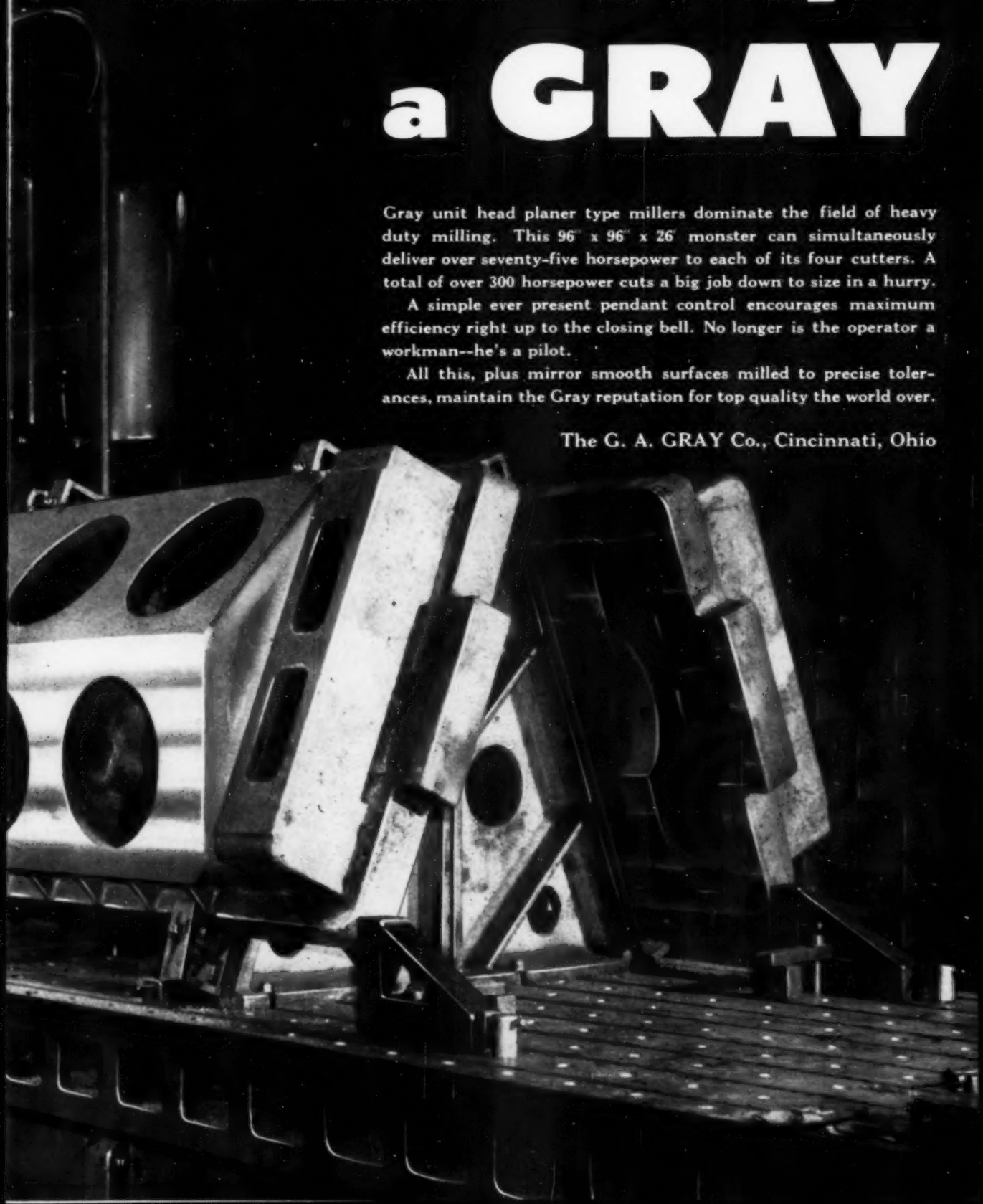
known to be the best in

BROACHING

backbone of a



modern shop a GRAY



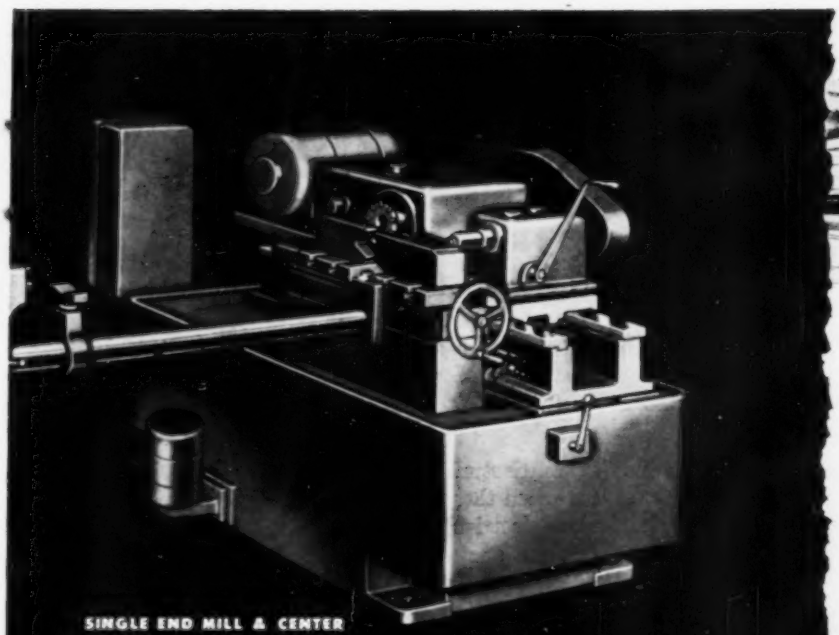
Gray unit head planer type millers dominate the field of heavy duty milling. This 96" x 96" x 26' monster can simultaneously deliver over seventy-five horsepower to each of its four cutters. A total of over 300 horsepower cuts a big job down to size in a hurry.

A simple ever present pendant control encourages maximum efficiency right up to the closing bell. No longer is the operator a workman--he's a pilot.

All this, plus mirror smooth surfaces milled to precise tolerances, maintain the Gray reputation for top quality the world over.

The G. A. GRAY Co., Cincinnati, Ohio

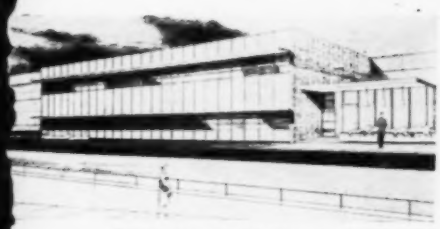
TWO-SPINDLE VERTICAL TURNER
Designed for precision, production-type turning, boring and facing. Two hydraulically-operated, automatically lubricated tool slides are mounted on hardened and ground steel ways with tapered gibs for accurate alignment. Spindle and slide units will operate independently, have separate controls.
MILL A CENTER—Model MC 1648. Incorporates two standard milling heads and two standard drilling heads. Feed rates infinitely variable. Right hand unit is adjustable for varying part lengths. Fixtures are self-equalizing vises. Milling and drilling units, clamping fixtures hydraulically actuated and electrically controlled.
BUILDERS OF AUTOMATIC PRECISION CUT-OFF, MILLING,



SINGLE END MILL & CENTER
Model SMC. Ideal for tool room or production work, incorporates standard slide, milling and drilling head, adjustable stock support and stop assembly. Speed of milling and drilling head unit varied by changing easily accessible pulleys and belts. Performing both milling and drilling during one clamping, work is milled square to the center.

UPRIGHT DRILLING & BORING MACHINE
Model VS 2615. Designed for heavy duty drilling and boring. This machine will accommodate many types of heads, making it adaptable to a wide variety of machining operations. Its standard automatic cycle consists of rapid traverse down, feed, and rapid return. Variations of this automatic cycle are available.

DRILLING AND SPECIAL MACHINERY



Partial view of M&M's new expanded Cleveland facilities. Why not visit us at your first opportunity?

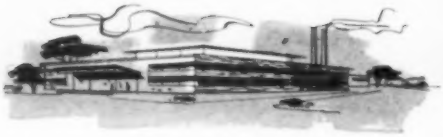
NEW!! Facilities Products

at Motch & Merryweather Machinery Co.

Keeping pace with the increasing need for flexibility in standard metalworking machinery, M&M now offers industry these four highly-flexible, readily-adaptable machine tools. To learn how they can add flexibility—and dependability—to your machining operations call your Motch & Merryweather representative, or write Motch & Merryweather Machinery Company, 1250 E. 222nd St., Cleveland, O.

MOTCH AND MERRYWEATHER

Machine Tool Manufacturing Division
Cutting Tool Manufacturing Division
CLEVELAND
Avey Division, Cincinnati



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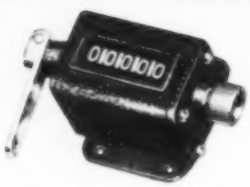
are alike...

but all can count on VEEDER-ROOT

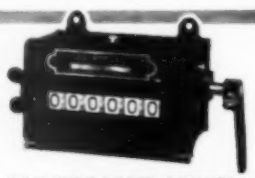
Sure, everybody's manufacturing problems are "different." But when these problems involve mechanical or electrical *Count*rol, they can *all* get the right answer from the same man . . . the Veeder-Root Distributor.

You will find that this man is tops in his field. He knows industry, and he knows how to adapt and apply standard Veeder-Root Counters to all types of production machines and processes, to give you exactly the facts-in-figures you need. If it's a question of quality, volume, cost inventory, production, wage or incentive payment, remember that *you're never sure unless you count*. And remember that the man you can always count *on* is your Veeder-Root Distributor. If you don't know who he is, just drop a line to D. G. Dresser, Veeder-Root Inc., Hartford 2, Conn.



SMALL RESET COUNTER

A compact, rugged reset counter for moderate duty in parts inspection, quality control, conveyors, machine tools, light presses, etc.
Dimensions: 1¾" long, 1 19/64" high, 1 7/16" wide.
Speed: Up to 1000 counts per minute.



BOX-TYPE RESET COUNTER

For punch press installations, conveyors, metal-working equipment, die casting, plastic-molding, rivet, spring and wire machining, or any installation requiring a heavy duty counter.
Dimensions: 4¼" long, 2 5/32" high, 3⅜" wide.
Speed: 500 counts per minute.

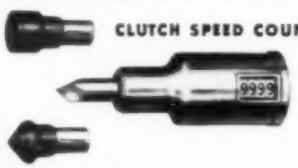
RESET MAGNETIC COUNTER

For remote indication of machine operation from plant to office.
Dimensions: 3 15/16" long, 2½" high, 1⅝" wide.
Speed: Up to 1000 counts per minute.
Coils: 110V-AC are standard. Other voltages are available. Panel mounting feature also available.

HAND TALLY

For quick spot-checks of production or performance.
Dimensions: 1 17/64" long (to end of reset knob), 1¾" deep, 2" high.
Counts one for each depression of the thumb lever, and resets to zero by a turn of the knob.

CLUTCH SPEED COUNTER



For checking to make sure that the machine is operating at the required R.P.M.
Dimensions: 3¼" long, ⅞" max. diameter. Non-Reset.
Internal clutch operates counter only when rubber tip is pressed against the shaft.

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PRODUCTION POINTERS from GISHOLT

MASTERLINE GISHOLT SINCE 1887

PACIFIC PUMPS INC. CUTS TIME 25% WITH THIS SETUP

Puts production on automatic basis with two MASTERLINE 2F Fastermatics

You'll spot good "pointers" here; this well-planned job demonstrates how Pacific Pumps Inc., Huntington Park (Los Angeles), Calif., a Div. of Dresser Industries, Inc., cut previous machining time 25% on cast steel pump heads!

One operator handles two Fastermatic Automatic Turret Lathes, machining the 11¼"-diameter, 2 11/16"-wide parts in two operations. Let's look at the first operation sequence. Work is chucked at X and located at R in a three-jaw air chuck. Hexagon turret tools then perform the following operations:

Station 1—five tools rough-turn B-C-D, rough-bore H-K face J.

Station 2—semi-finish-turn B, finish-turn D, semi-finish-bore H and chamfer G.

Station 3—finish-turn B.

Station 4—finish-face J with internal facing slide tool, actuated by pusher rod contacting positive stop mounted on headstock.

Station 5—finish-shave-turn C, break sharp corner at E with turret-facing slide tool operated by pusher arm on rear cross slide.

Station 6—finish-bore H (tool dwells in bore as spindle stops, then withdraws to eliminate spiral toolmarks).

A-F is rough- and finish-faced by rear and front cross-slide tools, operating with stations 1 and 2. Three spindle speed changes and three feed changes during automatic cycle assure longer tool life, finer finish on each cut. F.t.f. time? Only 6.75 minutes!

For the second operation, work is chucked on D and located at A. Here's the sequence, handled by hexagon turret tools:

Station 1—rough-shave-face M and rough N.

Station 2—operates front and rear cross slides simultaneously to rough- and finish-face R.

Station 3—idle turret.

Station 4—finish-face M and rough-form N, using turret-facing slide tool operated by pusher arm on rear cross slide.

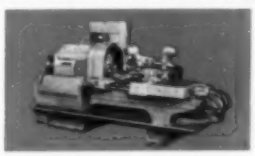
Station 5—semi-finish-bore N, chamfer L-P.

Station 6—finish-bore N, holding within .001".

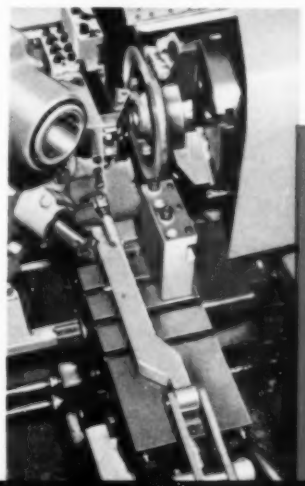
Floor-to-floor time on the second operation is a fast 2.75 minutes.

Automatic cycle on Fastermatic cuts previous time 25%. One operator handles both machines. Concentricity held to .0015" between chucking diameters on both sides of parts. Automatic feed and speed changes assure correct surface speeds on all machining operations.

Ask for new Fastermatic Catalog 1201.

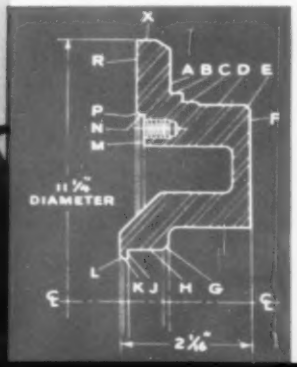


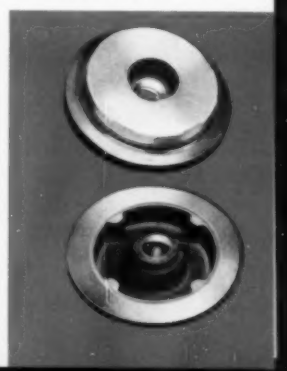
▲ First operation tooling setup. Note facing slide tool in foreground, operated by pusher rod on rear cross slide. Internal facing slide tool at far right.



◀ Rear overhead view of pusher-rod-operated turret facing slide tool used in second operation. Drawing indicates surfaces machined in both operations.

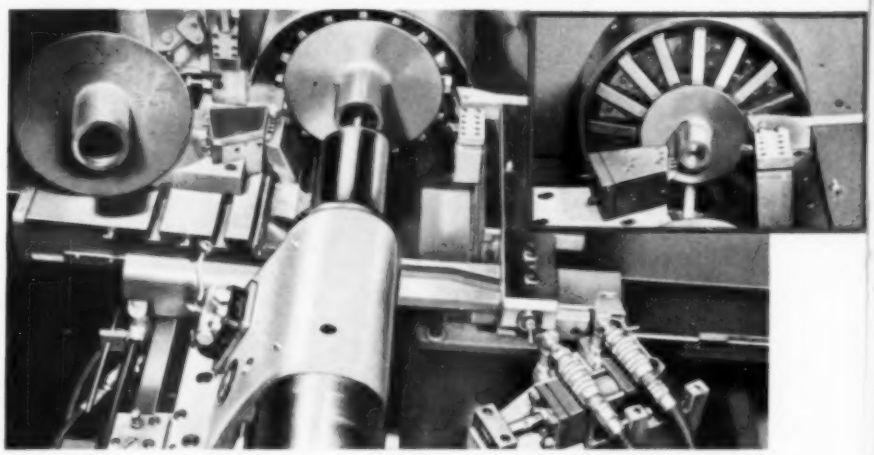
Finished workpieces, showing surfaces machined in first operation (top) and second operation (bottom). ▼





LEWELLEN MANUFACTURING COMPANY TRIMS TIME 53% ON PULLEYS

Assures accuracy with special chuck and cam-operated slide



▲ 10"-diameter pulley disc after rough-machining. Note taper-facing cam on rear independent slide; air-operated tool relief arrangement. Inset: 6"-diameter outer pulley disc, showing special chuck in close-up, gripping on small portion of O.D. edge.

Here's an operation worth reading about! It reveals how Lewellen Manufacturing Company, Columbus, Ind., cut machining time 53% on cast iron pulley discs, used in their extensive line of variable-speed motor pulleys.

A Gisholt MASTERLINE No. 12 Automatic Production Lathe handles 15 different part sizes, machined in lots of 50 to 100 pieces. All parts in a lot are rough-machined; tools are replaced, and the lot is finished. The fast setup on the No. 12 makes this operation economical, using similar tooling setups requiring only minor tool changes and cam adjustments for three basic part types—inner and outer pulley discs, and adjustable outer pulley discs.

Here's the operation on a 10"-diameter inner pulley disc (illustrated). The part slips on an expanding mandrel, extending from a 16-jaw, manually operated chuck. A large number of jaws are required to hold the part on a small portion of the O.D. to permit machining the tapered face past the O.D. edge. The part gets additional support from a revolving center on an air-operated tailstock which expands the end of the mandrel. This arrangement permits higher speeds and feeds and improves accuracy.

Two tools on the front carriage rough-turn the hub O.D., and a third tool forms a radius at the base. Simultaneously, a tool in a cam-operated sliding tool holder, on the rear independent slide, taper-faces the flange. An air cylinder shifts the cam for tool relief. The end of the hub is faced by a second tool on an adjustable tool block, completing the job in just 2.2 minutes floor-to-floor time.

Special chuck and support at hub end improve accuracy. Hub O.D. held within .0005". All taper angles handled by one cam with 30° adjustment. Quick-disconnect fittings are reversed to provide tool relief in opposite direction when changing from inner to outer pulley discs.

HOW GALE PRODUCTS CHECKS BALANCE ON FLYWHEELS

DYNETRIC BALANCERS GISHOLT

Assures product quality by checking wide variety of high-speed flywheels with 1S Balancer

Workpiece on supporting arbor. Manually operated breech-lock nut prevents slipping. Correction made by drilling on outer rim.

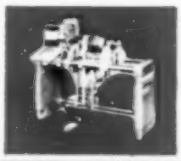
Like other alert manufacturers, Gale Products Division of Outboard Marine Corporation, Galesburg, Ill., knows accurate balancing of high-speed parts is critically important.

To make sure of long service life from their well-known line of outboard marine engines, Gale recently installed a Gisholt DYNETRIC 1S Balancer to balance flywheels used by the Corporation. Typical are the flywheels shown above, balanced on the Gisholt 1S to remove all sources of possible vibration.

A similar setup is used to handle all parts. Because the flywheels have no arbors or shafts, a supporting arbor with an angularly graduated pulley is used. This saves considerable time since the operator can quickly slip the workpiece on the tapered right end of the arbor. A keyway drives the part, which is held during rotation by a manually tightened breech-lock nut.

Depending on the part, the 1S is easily set up for either two-plane or single-plane balancing, which includes a check for moment unbalance in the part. Chance of error is minimized since the 1S permits observation of angle and amount of unbalance in the same visual plane, and the amount meter is calibrated in terms of the method of correction used—in this case, drill depth. These parts can be handled in less than one minute floor-to-floor time on a production basis—including time for correction.

Close tolerances are easily held to this manufacturer's rigid specifications. Locating and reading unbalance amount and angle on parts held outside of the work supports simplifies loading and unloading without affecting accuracy.



COMBINES BORING AND SUPERFINISHING IN AUTOMATIC CYCLE

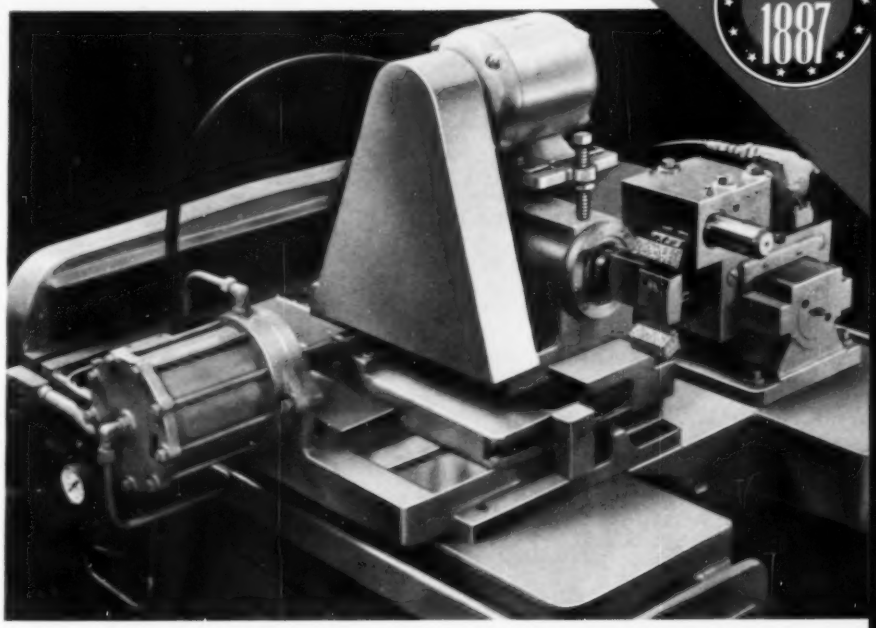
2-in-1 operation on Simplimatic saves time, cuts brake drum finishing costs

In studying this setup, you'll understand how many manufacturers have saved the cost of special equipment by using the versatile Simplimatic. Here's a typical example of the flexibility offered by this machine.

The workpiece, a 13⅝"-diameter cast iron brake drum, has been previously machined, leaving only the final finishing of the braking surface for this operation.

Note how simple the tooling is. The front independent slide carries a boring bar to finish the $2^{13}/_{16}$"-deep bore of the braking surface in the drum. An air-operated arrangement rotates the boring bar slightly, providing necessary tool relief to eliminate tool tracks.

As the boring operation is completed, an air cylinder moves the Superfinishing attachment, mounted on a special rear-slide base, into working position. At this point, the spindle speed decreases and the Superfinishing stones contact the machined surface. Within seconds this surface is reduced from 150-200 to 15 micro-inches RMS. The Superfinishing attachment then returns to starting position and the boring slide retracts as the platen table reverse-traverses, clearing the work for unloading. Total floor-to-floor time is a fast 3.5 minutes.



Close-up of tooling. Superfinishing attachment on special rear-slide base permits completing two operations in single handling.

Simplimatic's platen table permits infinite number of tooling arrangements using standard slides and simple attachments. Here machining and Superfinishing are combined to save time, extra handling and secondary operations on other equipment.

Ask for new Simplimatic Cat. 1159-C.

HANDLES 300 PARTS ON ONE MACHINE WITH JETracer

JETracer on MASTERLINE No. 4 Ram simplifies operation, improves accuracy

Here's how a well-known manufacturer of drive line components gets even more flexibility from the Ram Type Turret Lathe—by installing a tracing unit to handle stepped shafts and difficult contours. Nearly 300 parts are handled in job lots with the one machine.

Other equipment includes a hydraulically operated collet chuck, pneumatic bar feed, a turret threading attachment with selective gear box and rapid traverse to the cross slide for faster operation.

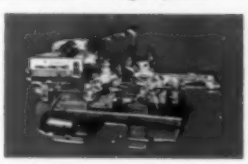
This stepped shaft (shown at left) is a typical part, completed in two operations from 2" steel bar stock. Fed through the spindle, the material is located against a stock-stop on the first station and chucked on the O.D. in the collet chuck. Front square turret tools face the end, chamfer the outside edge. Tools on hexagon turret stations 3 and 4 rough-turn two diameters. Then a single-point tool on the JETracer at the rear of the cross slide generates all steps, blends and radii. The part is cut off from the front tool post. Floor-to-floor time, just 2.75 minutes.

No tooling is removed for the second operation. Cutting tools are reset, stops relocated, and the template replaced. The $6^{9}/_{16}$"-long part is located against the stock-stop, and held on the machined O.D. Front square turret tools face and chamfer. Stock reducing tools on two hex turret stations rough two diameters. The JETracer completes the part. F.t.f. time is only 2.20 minutes.

▲ First operation tooling on steel shaft. Note simple hexagon and square turret tooling. JETracer handles complex part of operation.

Group of representative parts, handled with similar setups. Stepped shaft at left. ▶

Ram Type Turret Lathe with JETracer offers choice of single-point tracing, multiple turret tooling, or a combination of the two. Saves time, provides maximum accuracy. Ideal for wide variety of parts since flat templates require minimum storage space.



TALK TO GISHOLT ABOUT MACHINE TOOL LEASING

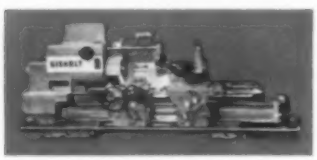
MASTERLINE
GISHOLT SINCE 1887

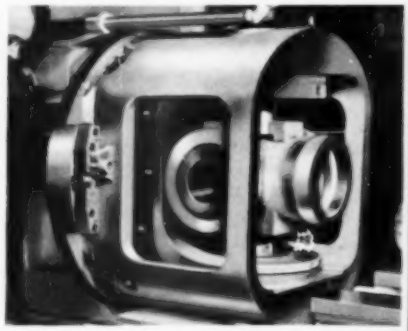
WALWORTH REDUCES TIME 30% ON 11 PART VALVE SIZES

Minimizes scrap with 8-position indexing fixture on 3L Saddle

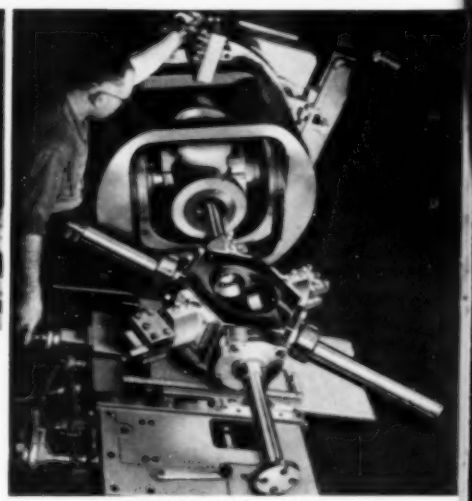
Having problems on parts requiring indexing of work and completion of machining in one chucking? Then you'll want to study this setup. It shows how Walworth Company's East St. Louis, Ill., valve manufacturing plant is saving time and reducing scrap with a special indexing fixture on a MASTERLINE 3L Saddle Type Turret Lathe—with a gapped bed providing 42″ swing. The fixture has four 90° indexes, with a 7½° and an 11° index both left and right of the centerline.

With minimum change-over, the setup shown handles over 11 different sizes of cast steel 2″ to 6″ straight pipeline valves, plus 2″ to 8″ swing check valves. Also, angular machining and seating operations are handled on a 10″ swing check valve. The same fixture handles all parts, with false jaws and riser plates compensating for size changes.





▲ Close-up of indexing fixture with 6″ valve body in position. Note movable overhead control panel.



Standard tooling on cross-feeding hex turret performs cross-facing, straight- and angle-boring and recessing plus threading operations. Note friction-type driver for screwing-in seat rings 5″ or smaller in diameter.

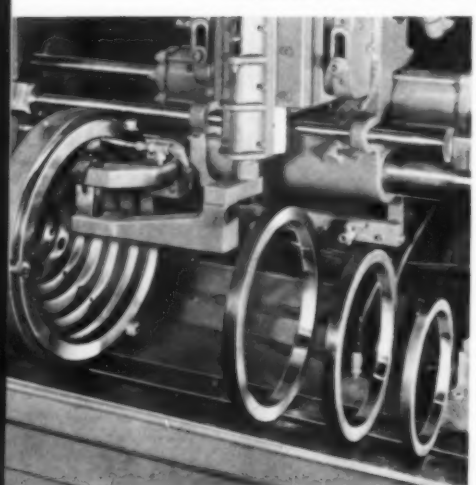
Performing all machining from the cross-feeding hexagon turret permits use of standard boring bars and facing tools for cross-facing and recessing operations. Each end of the valve is faced, bored, threaded—using a turret threading attachment—and undercut as required. Brass seat rings are screwed in with a turret-mounted friction-type driver. The driving lugs on the rings are bored out to complete the job.

A movable overhead control panel lets the operator be close to the work while starting, stopping, inching and reversing the spindle. Accurate depth of cut is assured by a reverse-feed stop bracket on the turret carriage. Longitudinal feed dials simplify length settings for facing operations. F.t.f. time on the 6″ valve shown is just 83.3 minutes.

Direct loading of work into fixture saves time. Up to 27 surfaces are machined on some parts. Eight index positions permit completing all work in one chucking.

CLEVELAND WORM AND GEAR CO. CUTS FINISHING TIME 30%

Superfinishes I.D.'s 30% faster with swinging stone holder on 51A Superfinisher



▲ Special faceplate fixture shows largest diameter ball ring in place. Three other sizes handled shown at right.

Here's a job story to save for future reference on finishing of straight, tapered or spherical bores. It tells you how the Speed Variator Div. of Cleveland Worm and Gear Co., Cleveland, Ohio, handles five different sizes of steel ball rings at production rates on a Gisholt MASTERLINE 51A General-Purpose Superfinisher, arranged to provide 16″ swing.

A special faceplate-type fixture is used for this setup. Five different diameters are machined in the face of this fixture and mate with the outside diameters of the parts handled.

Here's the operation: The workpiece is placed in the fixture, with the back face locating against permanent pins. Clamps hold the part securely. The Superfinishing stone is held on one end of a movable bar, for which a pivot point is provided by a bracket mounted on the traverse carriage. An offset arm on the Superfinishing quill gives the base of the movable bar reciprocating motion, translated into arc motion of the Superfinishing stone. Result: spherical I.D.'s are easily handled and quickly Superfinished to required tolerances.

With this setup, Cleveland Worm and Gear Co. obtains an average production of 50 parts per hour for all five ball ring sizes. The previously ground surface of 20 to 25 micro-inches RMS is reduced to 2.

Special faceplate fixture cuts change-over time. Pivoting stone holder provides simple, economical means of Superfinishing spherical bores. Machine can be easily changed to handle straight or tapered bores.

Ask for new Superfinisher Cat. 1169-B.

No. 1-258
695

The Gisholt Round Table represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

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The key to the production efficiency and accuracy of any hobber is the hob head.

Now Lees-Bradner introduces a new hob head that features 3½ inches of hob shift—readily set by handy, accessible limit switch stops. (pat. app. for)

How do you select the amount of hob shift? No calculations required! Just dial it!

This new hob head is only one of the many outstanding features that make Lees-Bradner 7-HD (hevi duty) hobbing machines first choice among production personnel. Available in single, 4 and 6 spindle models.

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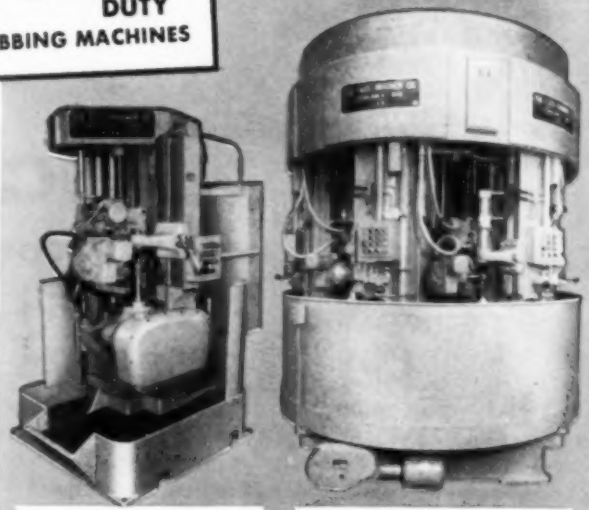


7-HD Single-Spindle Hobbing Machine

7-HD 6-Spindle Hobbing Machine

IF YOU THREAD OR HOB . . . GET A BETTER JOB WITH A LEES-BRADNER!

the LEES-BRADNER Company

CLEVELAND 11, OHIO, U.S.A.

G&L GUIDE
to general purpose heavy-duty machine tools

For top profits... for most efficient use of men and machines... take advantage of G&L metal-working counsel

BENEFIT from the experience of hundreds of other companies who have found G&L can help overcome exorbitant cost factors on all kinds of jobs. Working with the men from Giddings & Lewis, they simplified and speeded-up operations using more effective machines and techniques.

It pays to consult with Giddings & Lewis — where you get literally unequalled experience from the designers and builders of the world's *most complete line* of general purpose, heavy-duty machine tools. You get personal, first-hand information on the latest improvements in both machines and tooling. You're offered new ways to extend tool life on short and long runs at lowest cost per piece. You'll discover new ways to cut scrap and inspection costs . . . double-up on operations . . . weigh automation possibilities.

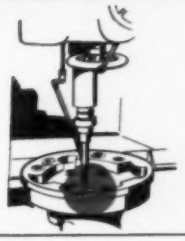
G&L job analysis engineers work with you and establish number and size of parts. How best to produce them and to *what* tolerances and finish. Next, our engineers and yours select the most efficient machining method. And they can match the machine with the *right* equipment from the world's broadest line of accessories and tooling.

A sequence of operations is planned, geared to minimize setups and make full use of machine work-ranges employing modern carbide tooling. In addition, G&L recommends and tailors specialized tooling to put extra profit punch into your production.

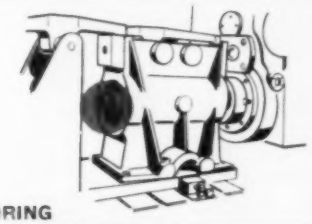
The following pages illustrate how well Giddings & Lewis is equipped to help you now! For further facts call your nearest G&L representative or write direct.

GIDDINGS & LEWIS MACHINE TOOL COMPANY

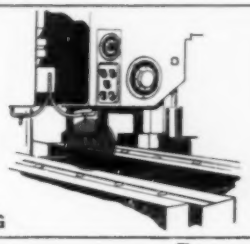
FOND DU LAC, WISCONSIN



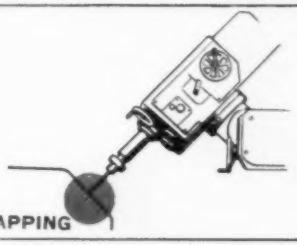
DRILLING



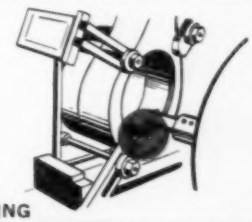
BORING



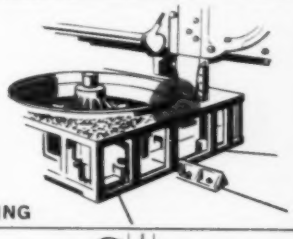
MILLING



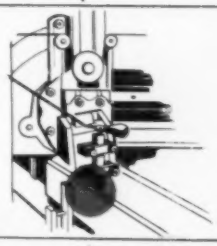
TAPPING



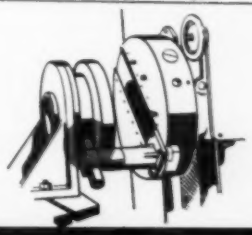
THREADING



TURNING

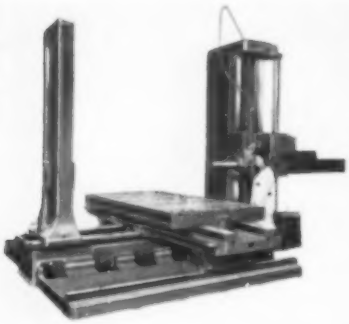


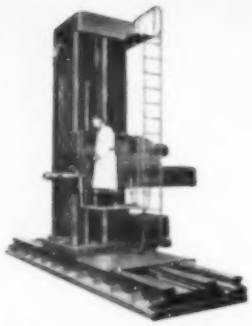
PLANING

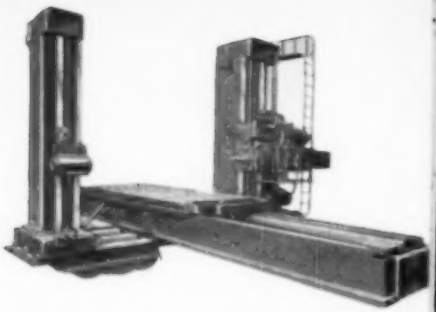


FACING

You can depend on these advance-design Giddings & Lewis machine tools for more profit on your





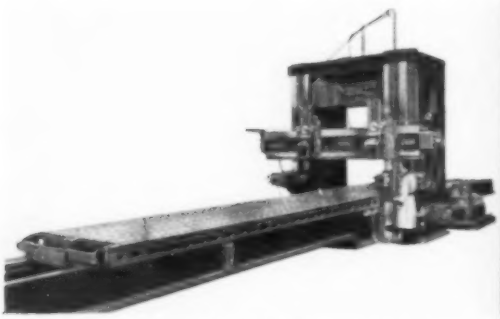


HORIZONTAL BORING, DRILLING AND MILLING MACHINES

TABLE TYPE — 10 models, 4 series, 3 to 8" dia. spindle, 10-50 hp.

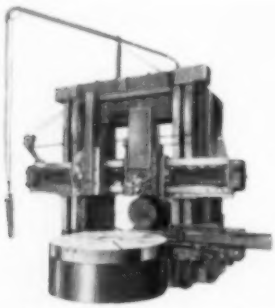
FLOOR TYPE — 10 models, 5 series, 5 to 14" dia. spindle, 20-150 hp.

PLANER TYPE — 10 models, 4 series, 5 to 14" dia. spindle, 40-150 hp.

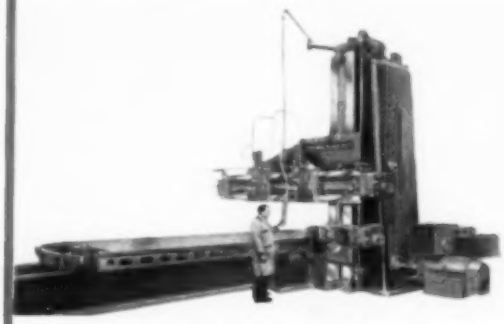


HYPRO Double Housing Planers — Table widths: 30-144" (any length desired), 25/50 hp — 100/200 hp.

HYPRO Planer Type Milling Machines — Table widths: 30-144", quill dia. 10-14", water-cooled head drive motors to 100 hp.



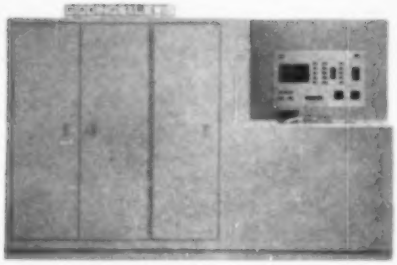
HYPRO Vertical Boring and Turning Mills — table sizes 54"-12', drives to 125 hp.

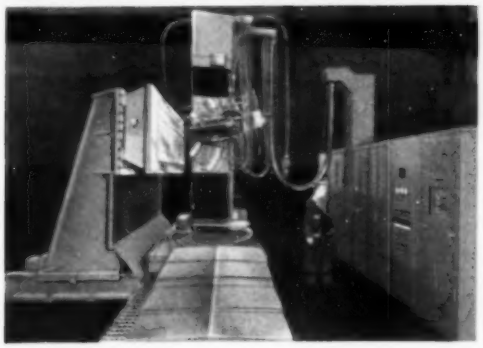


HYPRO Openside Planers — table capacities 36"-96" (any length desired), 10/20 hp — 100/200 hp.

G&L and HYPRO DIVISION
GIDDINGS & LEWIS MACHINE TOOL CO.
FOND DU LAC, WISCONSIN

to return investment!





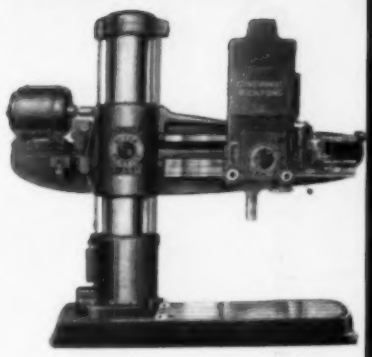
NEW!

NUMERICORD SYSTEM — Precalculated data is fed to computing director (see photo at top) which converts data into time-coordinated continuous signals. Magnetic tape recorder impresses all electrical signals from director on appropriate channels of master magnetic tape.

HYPRO Spar and Skin milling machine in center photo and VARIAX in bottom photo, (2 to 5 axes models) profile milling machine, available for high-speed milling of a variety of intricate sections. Machines use either NUMERICORD system, or (for 2 and 3 axes models) electronic Dupli-Tracer system.

NEW!

Super Service Radial Drilling Machines—4′ arm, 13″ dia. column to 8′ arm, 19″ dia. column with ALL NEW heads featuring lever shift, partial or full preselection of 36 speeds and 18 feeds. 7′ arm, 22″ dia. column to 12′ arm, 26″ dia. column available in Master Series; the 11″ dia. column machines are available with a 12 speed head on a 3′, 4′ or 5′ arm or with a 36 speed head on a 3′ or 4′ arm.



Super Service Upright Drilling Machines—General purpose All Geared 21″, 24″, and 28″ machines with round or box column; 39″ machine with box column only; Direct Drive 21″, 24″, and 28″ machines with box column.

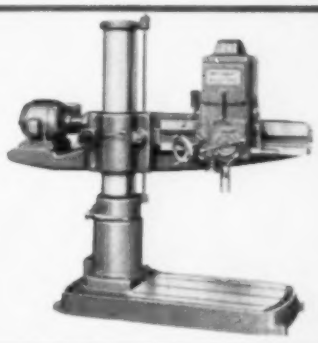
CINCINNATI BICKFORD DIVISION

GIDDINGS & LEWIS MACHINE TOOL CO.

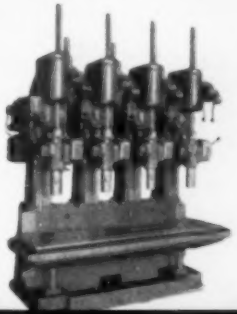
OAKLEY, CINCINNATI 9, OHIO

Super Service Precision Drilling Machines — specially suited to those operations using an automatic spacing table, thus eliminating jigs.

Super Service Radial Drilling Machines with 9″ column, 3′ or 4′ arms for fast, easy handling. 3 hp motor with 9 speeds in various optional ranges.

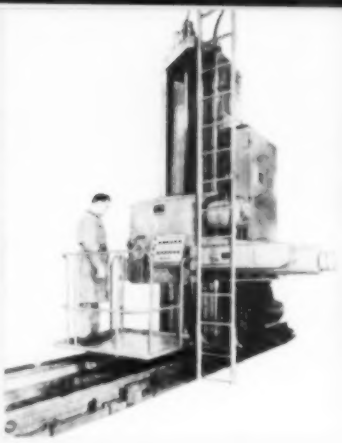


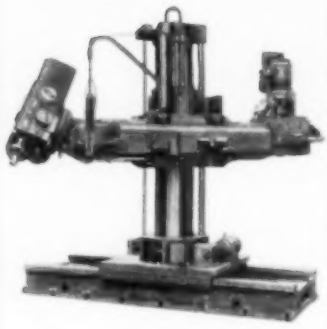
Super Service Gang Drills — Entire mechanism contained in upper section. Each machine spindle is driven by an individual motor — available with 2 to 6 spindles.



NEW!

Horizontal Drilling, Milling and Boring Machines—2 models, 4", or 5" dia. spindles, 42" continuous spindle travel, 20 or 25 hp drives. NEW Automatic Electronic Machine Control features precise, automatic tape positioning control (3 methods in one system).





NEW!

Universal Radial Drilling Machines—for radial, horizontal, angular and compound angular machining, in 14" dia. column, 6' reach and 22" dia. column, up to 10' reach, 5-20 hp spindle drive.

G&L Vertical Turret Lathes — Available with a choice of head arrangements and interchangeable table and chucks. Machine capable of changing feeds and speeds while cutting.

Tilting Head Horizontal Drilling and Tapping Machines — Model 1030, 3" spindle, 24" spindle travel, 16" dia. column, 7½ hp drive motor. Head tilts 45° above and below horizontal.

DO IT BETTER WITH GIDDING & LEWIS

KAUKAUNA MACHINE & FOUNDRY DIVISION
GIDDINGS & LEWIS MACHINE TOOL CO.
KAUKAUNA, WISCONSIN

DAVIS BORING TOOL DIVISION
GIDDINGS & LEWIS MACHINE TOOL CO.
FOND DU LAC, WISCONSIN

Davis line boring bars and block-type tooling

Complete Davis Tooling service plus broadest standard line of boring, turning and planing tools . . . arbors, sleeves, boring heads and bars for any special or routine job.

Davis Special Boring tools

Davis Planer tools

Davis Stub Boring sets

GIDDINGS & LEWIS MACHINE TOOL COMPANY
FOND DU LAC, WISCONSIN

Vickers Magneclutch for Better Torque Transmission . . .

VICKERS®

Magneclutch®

solves difficult tension control problem in slitting machine operation

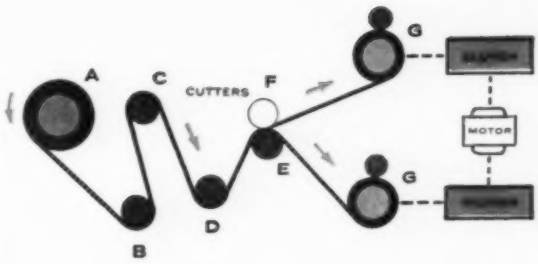
This specialized machine by Gudeman Company of Chelsea, Michigan, slits mil-thick materials such as paper and metal foil for use in capacitors.

As the feed roll is unrolled, slit and rewound, the tension on the material as it passes through the slitting knives and rollers must be accurately controlled, to assure uniform rewinding and to prevent strains, breakage or snarling.

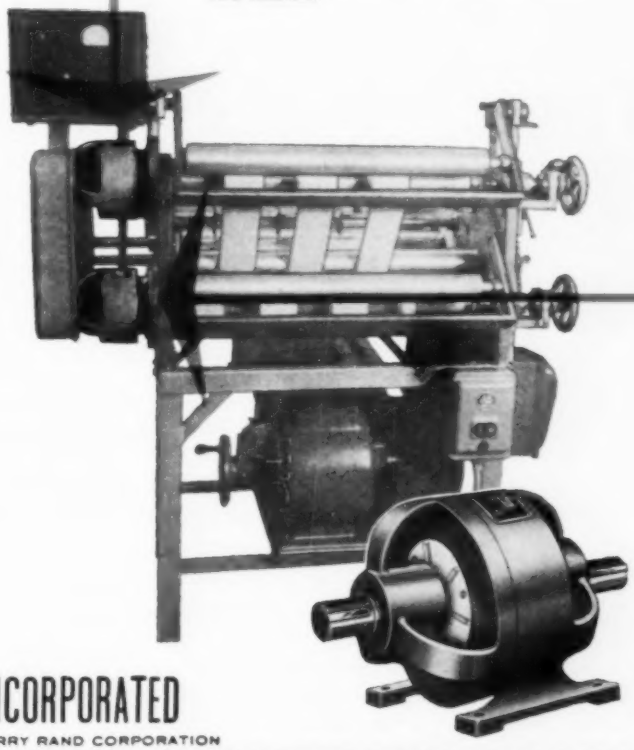
The manufacturer was able to obtain this necessary tension control independent of speed only with the Vickers Magneclutch, after mechanical clutches had failed because of changing characteristics and difficulty in adjusting to changing tension demands.

This, of course, is only one of many practical uses for the Magneclutch, the magnetic particle clutch that provides smooth operation without grab or chatter, torque at zero slip, fast response, and long life because there's no wear on torque transmitting surfaces.

Write for complete information and literature.



Rollers B, C and D pull the material from the unwind roll and establish the speed at which the material flows through the machine. The torque transmitted by the Magneclutch establishes the tension in the material between roller D and roller G. As the diameter of the windup roll increases, the clutch slips automatically, permitting the material to wind up at a constant speed and tension.



ELECTRIC PRODUCTS DIVISION — VICKERS

VICKERS INCORPORATED
DIVISION OF SPERRY RAND CORPORATION
ELECTRIC PRODUCTS DIVISION
1879 LOCUST STREET • SAINT LOUIS 3, MISSOURI

Guard removed for photographic purposes

Production rate climbed sharply when the new "81-Coat" abrasive belts were used for this job. It's removing the gates from sand-cast aluminum parts used in the automatic feeder of a punch press. A 24-X 81-Coat Resinall Metalite Belt was found best, with lubrication by light grease stick. The same advantages of increased production, and longer life, are found with discs as well as belts . . . on stainless steel, brass, and other metals.

Faster stock removal with new abrasive belts

New "81-Coat" abrasive belts with Spur Action have rougher, tougher cutting points for faster stock removal . . . stronger resin bond for greater heat endurance. Try them on *your* production problem—at your plant or at one of our 17 Abrasive Tech Methods Rooms: Atlanta, Boston, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, Teterboro, Camden, San Francisco, Seattle, St. Louis, and Brantford, Canada. Main Office and plant: Troy, N. Y. For Export, Norton Behr-Manning Overseas, Inc., Troy, N.Y., U.S.A.

BEHR-MANNING CO.

TROY, N.Y.

A DIVISION OF NORTON COMPANY NORTON ABRASIVES

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories

BEHR-MANNING®

A NEW FIRST is making history

the IDEAL DRIVING CENTER

For the first time, on work held between centers—chucking and clamping time are eliminated; unobstructed end-to-end machining is possible

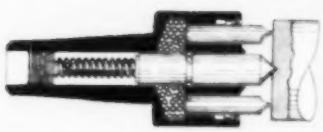
So new and different that we dare to use the word *revolutionary!* You have used live centers for years—now we give you a new word for your shop vocabulary: the Driving Center.

The action of the IDEAL Driving Center is simplicity itself—basic hydraulic and friction principles, with steel balls taking the place of a fluid, provide its operating action.

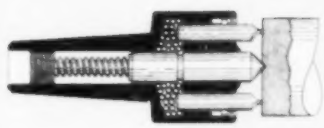
The IDEAL Driving Center is another step in the direction of automation. Spectacular time savings can be achieved through elimination of chucking and clamping, by end-to-end machining without removing the work, loading and unloading without stopping the machine.

The Driving Center provides a rigid, direct drive, without backlash; there are no problems with slack or chatter; the unit functions equally well with uniform work pieces, rough castings, forgings, other uneven shapes or surfaces.

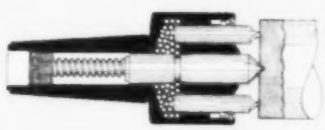
Available to fit Morse tapers No. 2 to No. 6, work diameters from .407" to 6.375". Call or write us today. We'll be glad to rush you complete details and prices.



Free-wheeling, the centering pin, held in its maximum extended position by the spring, engages the work surface first. The horizontally free moving "driving pins", their ends floating in a "fluid" of hardened steel balls, have not yet made contact with the work.



As the tailstock ram moves the work into position against the driving pins, the centering pin is forced back into the driving-center head against the pressure of the spring. The flat ends of the driving pins are forced into the mass of steel balls, starting to pack them more tightly.



Finally the pin ends are forced so deeply into the mass of balls that no further longitudinal movement is possible. The fluid action of the balls distributes pressure evenly, so that each pin is driven into the work face with equal pressure. Some of the balls slip into the grooves around the circumference of the centering pin where they jam so tightly that the centering pin cannot move back further in its cylinder.

IDEAL

IDEAL INDUSTRIES, Inc.
1057-A Park Avenue
Sycamore, Illinois

Please send me prices and complete information on the operation and application of the new Ideal Driving Centers.

Name_____
Firm_____
Address_____
City_____ Zone_____ State_____

Precision Tool News

No. 4 B·S REPORTING NEW DEVELOPMENTS AT BROWN & SHARPE'S PRECISION CENTER

New Magna-Set System Measures to .0001" Any Desired Height Right Up to the Ceiling

Brown & Sharpe's new Magna-Set system gives you everything you need to measure any height right up to the ceiling with gage block accuracy. It can be used in lab or shop, on surface plates or machine tables, to measure "short" or "tall" pieces to tolerances as close as .0001".

Basic components of the system are new B & S Riser Blocks, magnetic or plain, and the new B & S Hite-icator—10" or 20".

Riser Blocks are 9" hardened steel castings, top and bottom surfaces chrome-plated and lapped to better than Class A gage block accuracy per inch. Magnetic blocks can be stacked to form a "solid" column, almost impossible to knock over; and they hold the Hite-icator firmly. When switched off, they are easily disassembled. Hite-icator is a refinement of the B & S Hite-Set, featuring a new dial indicator that determines position at a glance to .001" over 1" range, so that only tenths need to be read from mike head.

Other Brown & Sharpe products, such as Black Granite Surface Plates, Super Vernier Height Gages, Hite-Sets, Hite-Cheks and Dial Indicators, can be used in conjunction with the Magna-Set system to provide everything you need to meet all your height measuring and height transfer requirements with gage block accuracy.

New B & S Radius Gages Are More Convenient For Precise Checking

New Brown & Sharpe Individual Radius Gages provide the easiest and most convenient method of checking precisely radii from 1/32" to 1/2".

Each gage has 5 different testing edges to cover both concave and convex radii. They are made of stainless steel, rust- and stain-proof, totally nonmagnetic, with dull finish. Individual gages are furnished in case with holder, in three desirable combinations. Gages are also available separately.

Cat. No.	Gages in Set	Sizes (Inches)
628-2	16	1/32-17/64 by 64ths
628-3	8	9/32-1/2 by 32nds
628-1	(Combines all 24 gages in one case)	

Your Local Distributor Can Give You Complete Service

All B & S precision tools and related items are available to you at factory prices through the B & S distributor who is only minutes away from your plant in any industrial area. He has factory-trained men who are thoroughly familiar with the B & S line, and who can provide experienced, on-the-spot cooperation with all of your precision tool needs. Brown & Sharpe Mfg. Co., Providence 1, Rhode Island.

PROGRESS IN PRECISION FOR 125 YEARS

Brown & Sharpe B·S

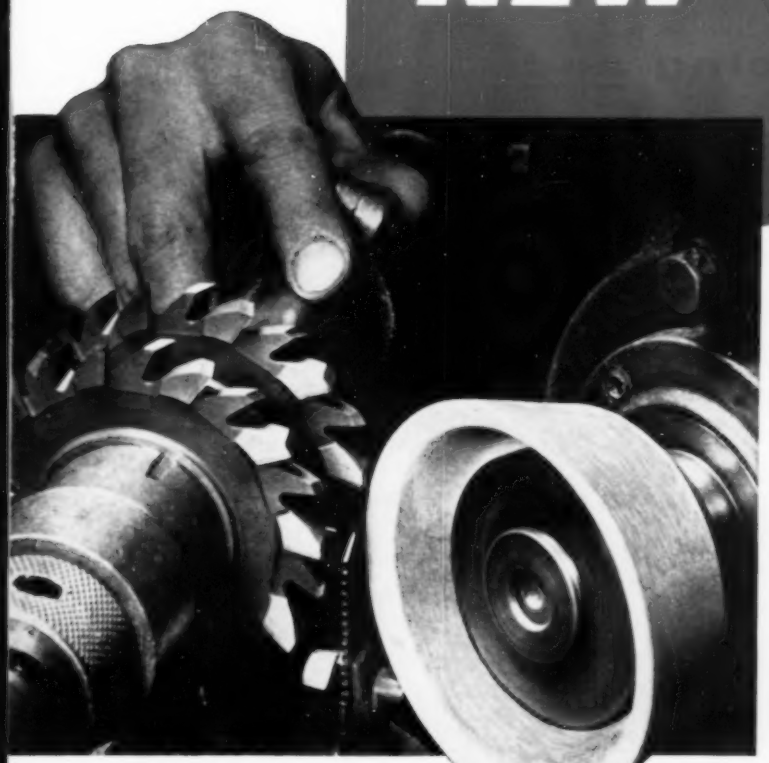
PRECISION TOOLS AND GAGES • MILLING, GRINDING AND SCREW MACHINES • CUTTERS • MACHINE TOOL ACCESSORIES • GEAR, VANE AND CENTRIFUGAL PUMPS

SIMONDS
ABRASIVE CO.

NEW SA Borolon®

TRADE MARK

Grinding Wheels



Ideal for tool and cutter grinding and horizontal surface grinding.

COOL ACTION HELPS TOOL STEELS HOLD THEIR TEMPER

SA Borolon is a unique and radically different aluminum oxide abrasive. Cutting particles are of single, uncrushed crystal formation for greater stress-free cutting edges. This is why these wheels give faster grinding with heavier cuts—and, at the same time, protect expensive tool steels with safe, non-burning action. Use SA Borolon wheels on your grinders.

Send for bulletin ESA 272 for details plus grain and grade specifications.

INDUSTRIAL DISTRIBUTORS · THE RIGHT HAND OF PRODUCTION ·

CALL YOUR SIMONDS DISTRIBUTOR

Proven products
Dependable know-how
Quick supply

SIMONDS ABRASIVE COMPANY

Tacony & Fraley Sts., Philadelphia 37, Pa.

Division of Simonds Saw and Steel Co.

BRANCHES: Philadelphia • Chicago • Detroit • Shreveport • Los Angeles • San Francisco • Portland, Ore.

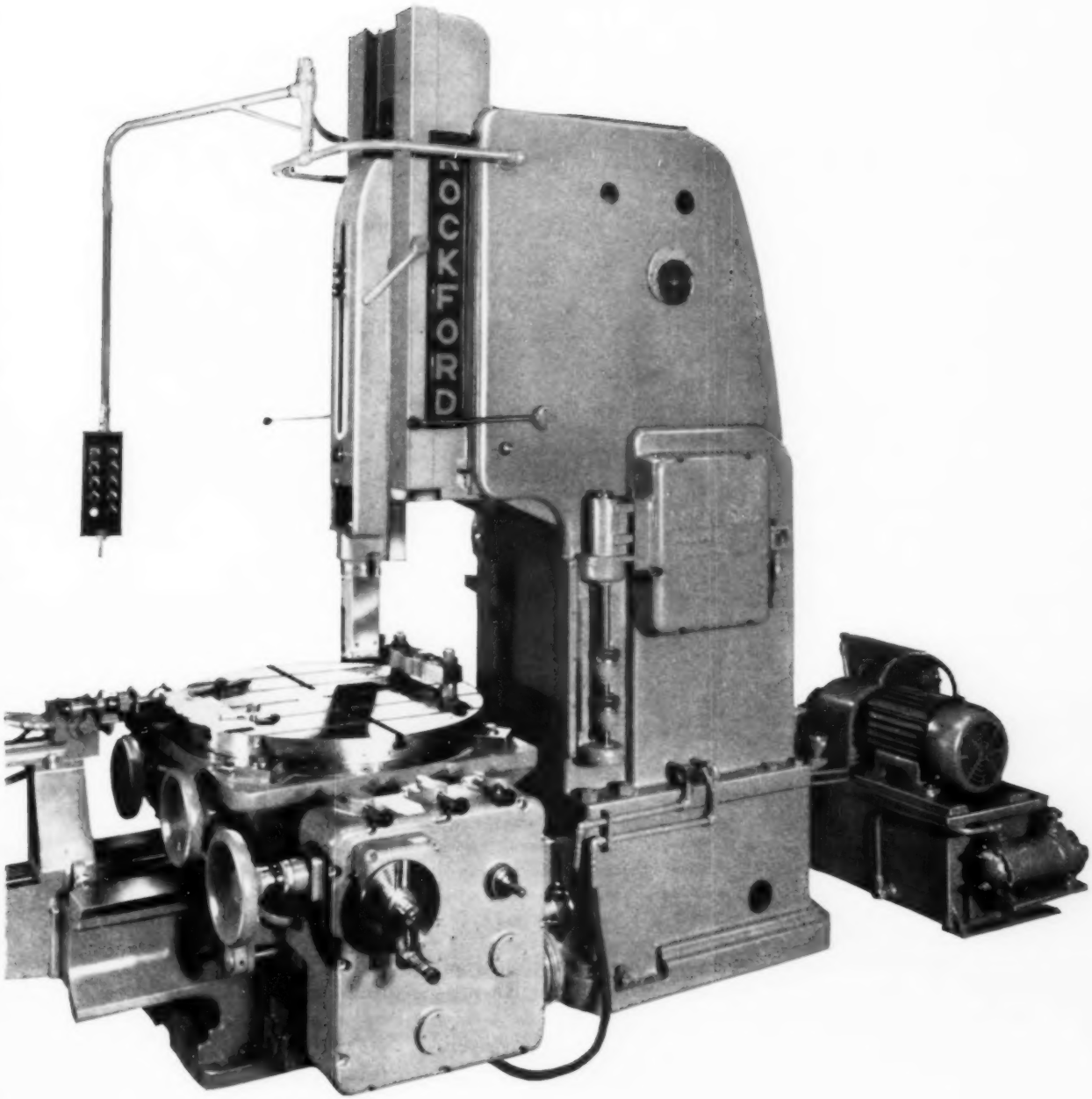
NEW HYDRAULIC SLOTTER OFFERS BOTH

tracing and conventional slotting

Here's a powerful new Hy-Draulic Slotter capable of doing both conventional slotting and complicated tracing work. Rotary tracing and straight work are handled by a transverse movement of the saddle. Equipped with a highly sensitive, precision-engineered Kopy-Kat Duplicator, this slotter will actually produce its own working templates from a toolroom master, or from a finished workpiece.

Design features of this versatile new machine include powerful fulcrum drive to the ram, hydraulic feeds and power rapid traverse in all directions, and pendant controlled cutting speed changes.

See your Rockford Machine Tool Co. representative, or write us directly, for the complete information on this new Hy-Draulic Slotter.



ROCKFORD MACHINE TOOL CO.

2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

VIBRA-WASHER

. . . . THE COMPLETELY NEW AUTOMATED PARTS WASHER AND METAL CONDITIONING MACHINE!

- **Labor Saving**
- **Versatile—Adaptable to many operations**
- **No loading and unloading of work baskets**
- **Available for single or multi-stage washing or metal conditioning operations**
- **No nesting of parts during cleaning or conditioning cycle**
- **Adjustable capacities up to 10,000 pounds per hour**

The versatile new VIBRA-WASHER brings to industry an entirely new concept in the washing and conditioning of small metal parts, stampings and castings. VIBRA-WASHER employs a vibrating "work carrier" which automatically conveys parts through the cleaning or conditioning bath. Solution is forced vigorously around the parts—even into blind drillings and slots—with unrivaled thoroughness. A gear-driven flight conveyor receives the parts and removes them from the washer for packing or further processing. In single stage operations, VIBRA-WASHER removes chips, oil and grease quickly and economically. The gentle yet effective vibrations will not damage the most delicate threads. For multi-stage processing, such as cleaning and preparing parts for painting, several units in line will provide cleaning, rinsing, and phosphating, with all "between stage" handling eliminated. The "work carrier" speed is adjustable to low or high capacities, up to 10,000 pounds per hour. Bulletin 107 gives you complete details on the new VIBRA-WASHER. Write today for your copy, to: Industrial Washer Division, Simplicity Engineering Company.

SALES REPRESENTATIVES

Neilson Chemical Co., 2300 N. Gainsboro Ferndale (Detroit 20), Michigan

Mfgs. of Metal Cleaning, Phosphate Coating and Metal Conditioning Products

FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario.

FOR EXPORT: Brown & Sites, 50 Church Street, New York 7, N. Y.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 26, MICHIGAN

208

Parts made by almost every industry have holes made by a KINGSBURY

From the carburetor body to the lock cylinder . . . the bearing race to the hammer head . . . would just be a variety of parts — except for one important advantage in common:

the drilling and tapping operations were completed faster, at lower cost per operation, with unvarying accuracy — in every single part — because an automatic Kingsbury machine did them.

This can mean a distinct manufacturing advantage to *you*, if you have high production drilling, tapping, reaming, spot facing, light milling and similar operations to do on your parts. You can do them at the *rates you need*, at the *lowest practical cost, month in and month out*, on a Kingsbury indexing automatic.

"Kingsbury jobs" — as the automotive and appliance industries frequently call them — are typically done in this manner: The manufacturer sends Kingsbury a print (or sample) of his part, specifying operations and the production rate required. Kingsbury then incorporates the appropriate standard operating units, base, indexing unit and drive, to build an automatic drilling and tapping machine *to do what the customer wants, at the rate he wants.* Test runs by Kingsbury *before* shipment, and *delivery of a fully tooled machine* ready to produce, provide positive assurance that performance will match production requirements.

Whether you make automotive, plumbing, hardware, machine, electrical appliance or some other kind of parts, investigate the production and cost benefits in doing the drilling and tapping on a Kingsbury. Send your requirements and questions to Kingsbury Machine Tool Corporation, Keene, N. H.

KINGSBURY

INDEXING AUTOMATICS
for high production drilling and tapping

ARMSTRONG

T-SLOT CLAMP

SET-UP AND HOLD-DOWN TOOLS

STEP BLOCK

ARMSTRONG Set-up and Hold-down Tools reduce setting-up time—keep men and machines producing. Designed for use on planers, drill presses, milling machines, etc., they hold work securely and rigidly, and thereby reduce spoilage and prevent costly accidents.

Your local Armstrong Distributor carries ARMSTRONG Set-up and Hold-down Tools in stock in sizes for every operation. Stop haphazard setting-up methods. Provide each of your machines with a full complement of ARMSTRONG Set-up and Hold-down Tools.

NON-SKID BLOCK

Write for Circular

Buy ARMSTRONG TOOLS from your Industrial Distributor

PLANER JACKS

UNIVERSAL CLAMP

T-SLOT BOLTS AND NUTS

STRAP CLAMPS

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

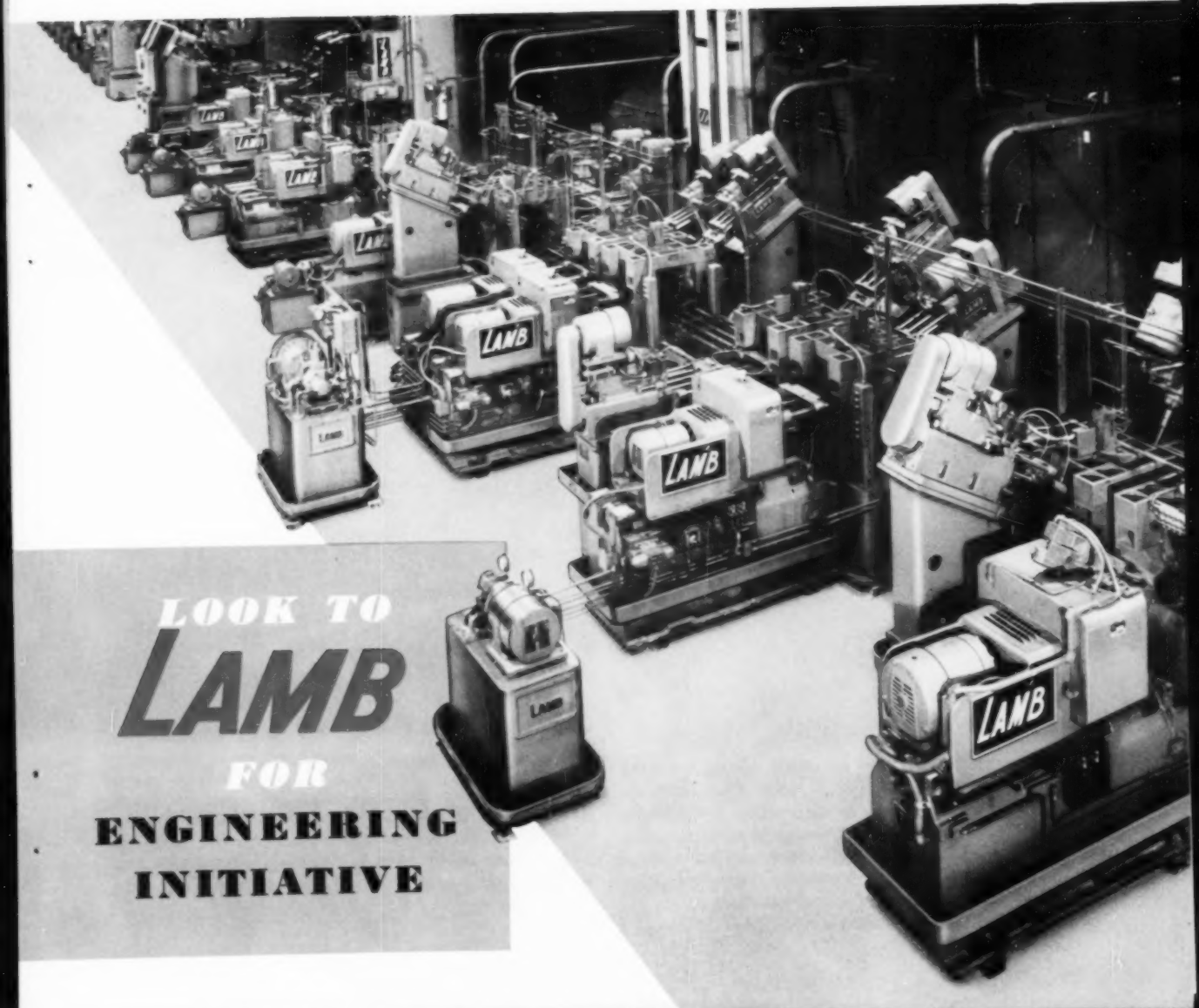
5215 W. ARMSTRONG AVE. CHICAGO 30, U. S. A.

THIS NAME PLATE

On a Transfer Machine

LAMB

Means { LOWER COST PER PIECE
LESS DOWN TIME
EASIER CHANGE-OVER



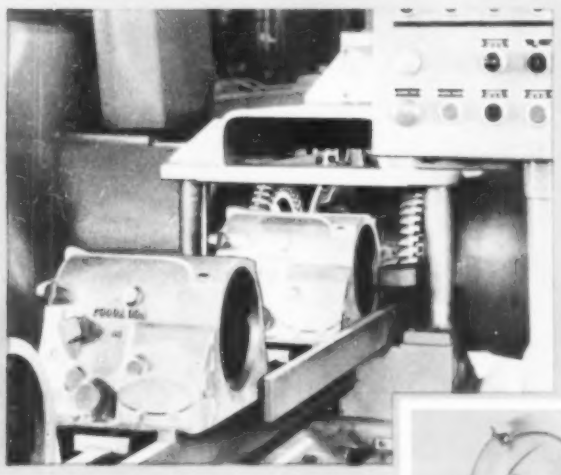
LOOK TO

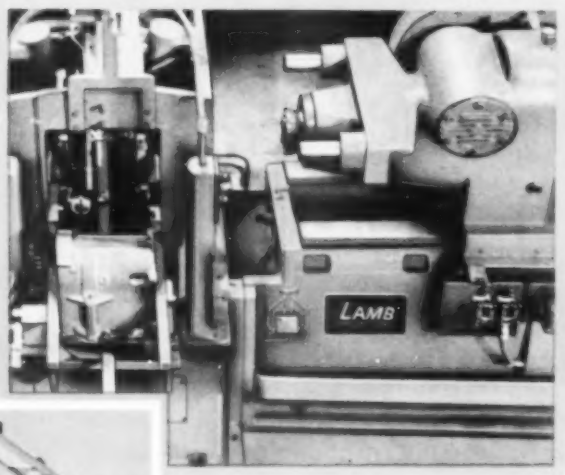
LAMB

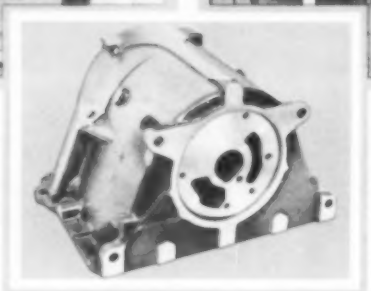
FOR

ENGINEERING INITIATIVE

A Superior Transfer Machine . .





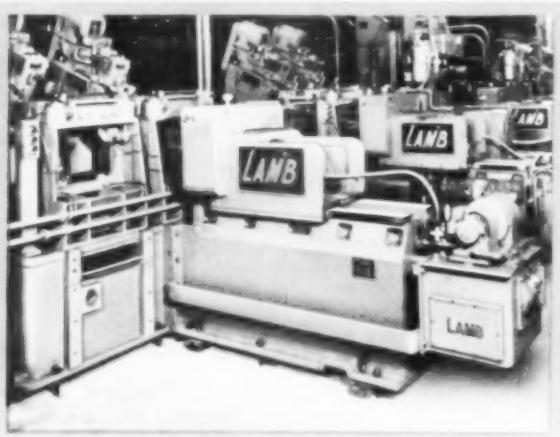


Part Moves Instead of Cutters

Two milling heads are solidly anchored to wing bases to absorb high cutter thrusts. A traversing fixture carries the securely clamped part between the cutters utilizing the movement of the transfer mechanism as the feed. Results: greater rigidity for better surface finish, longer cutter life, and shorter time cycle.

Plunge Facing of Intermittent Surface on Rough Casting

A rigid spindle plunge faces the rough casting with an inserted blade cutter. Two massive guide bars on work head enter into fixture guide bushings giving greater accuracy, better work finish, longer tool life, and permitting faster feeds and speeds.



No Floor Consoles

Operator's push buttons are sequence arranged at the first station of each section. Schematic pilot light arrangement on main control panel doors is visible from operator's position and indicates each station function or malfunction. Elimination of floor consoles saves space and simplifies electrical maintenance. All electrical controls and wiring conform to J.I.C. Standards.

Building-Block Construction Provides for Part Design Change

Standard main bases tie together the standard drilling and tapping units. Such interchangeable components provide the highest degree of machine flexibility for future part design changes. Hardened steel ways are standard construction. The individual standardized hydraulic power unit off the floor improves housekeeping.

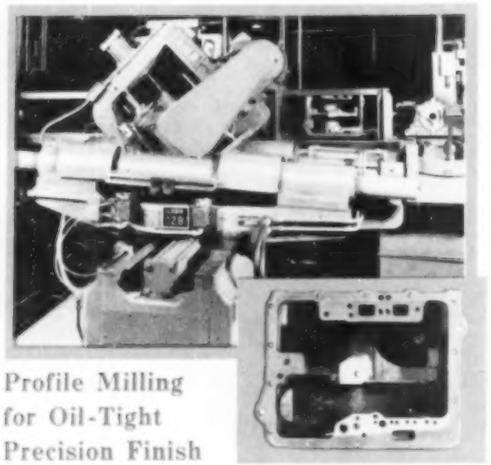
. . because of LAMB'S Knowledge of Manufacturing Methods

Broad experience in modern manufacturing methods that assures understanding of the customer's problems is an important characteristic of the LAMB organization. They also have the engineering ingenuity to solve these problems in a logical and economical manner. Illustrated and described on these pages are a few of the reasons why your next machine should have the LAMB name plate. It will mean higher production, lower unit cost, less down time, greater accuracy and uniformity, simplified maintenance, service accessibility, and minimized obsolescence. Submit your manufacturing problems for complete analysis today.

Transmission Case Completely Machined

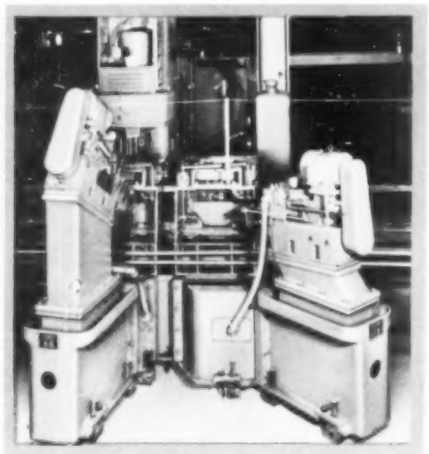
Production is 128 pieces per hour at 100% efficiency. There are 112 stations for 237 machining operations, 128 hole probes with operations performed in five part positions. Parts are successively rough milled, bored and faced in the first section of the machine. Drilling, reaming, tapping, chamfering, counterboring, countersinking, spot facing and trepanning are completed in sections two, three and four. In the fifth section, the semifinish bore and counterbore, and finish profile mill operations are performed.

LAMB CREATIVE ENGINEERING AND COST-CONSCIOUS DESIGN



Profile Milling for Oil-Tight Precision Finish

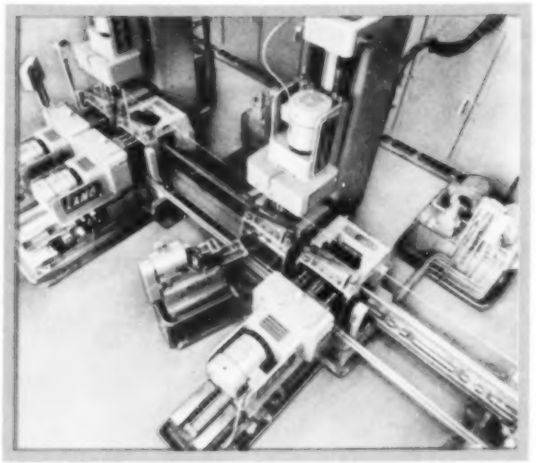
Lamb ingenuity provides the method for precision end-milling the part's critical mounting faces. A constant feed rate is maintained over a 90° change in direction while cutting two surfaces parallel within .001 in 8 inches. The compound spindle carriage moves horizontally and vertically on pre-loaded linear ball bearings eliminating all carriage play.



Standard Components

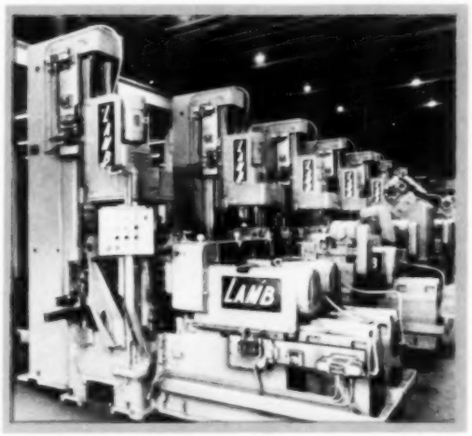
Standard quill type hydraulic units are mounted on standard wing bases. Height variations and angular approach to work are accomplished with simple angular spacers. A change in hole angularity requires only an inexpensive change of spacer. This "building-block" construction is applied to all units.

MORE EVIDENCE OF LAMB ENGINEERING FOR MANUFACTURING AND MAINTENANCE ECONOMY



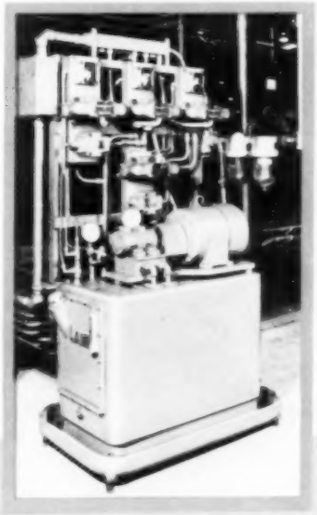
Greater Accessibility

Optimum utilization of each machining unit allows wider spacing without excessive floor area. This "open" arrangement affords greater accessibility for tool change, adjustments and maintenance. For part design changes additional machining and or inspection equipment usually can be accommodated.



Hydraulic Manifolding Reduces Piping and Maintenance

Hydraulic manifolds with gasket mounted valves minimize piping and the possibility of leakage. Maintenance is simplified as the hydraulic controls are readily accessible and easy to replace without disturbing the piping.



"Packaged" Hydraulic Power Units Simplify Service

Hydraulic power units are built to J.I.C. Standards with components made by leading manufacturers. Motors, pumps, valves, fittings, etc., are selected to assist users in minimizing inventory of replacement parts and for service familiarity of maintenance departments.

New Plant And Offices This modern plant, designed for special machine manufacturing, houses men and machines selected to provide the finest in automated production equipment.

SINCE 1914

F. JOS. LAMB CO.

5663 E. NINE MILE ROAD • DETROIT 34, MICHIGAN

Engineers and Builders of Special Machines and Automation Equipment

Litho in U.S.A.

7953

Another Record

One important factor contributing to another PRECISION PERFORMANCE record well known to users of Bay State taps is a surface treatment similar to so-called liquid nitriding. It resists abrasion and loading and thus increases wear life and productivity.

It is beneficial for tapping steel and sand cast aluminum and is a "must" for cast iron and stainless steel.

Order Bay State . . . and Requisition a Record!

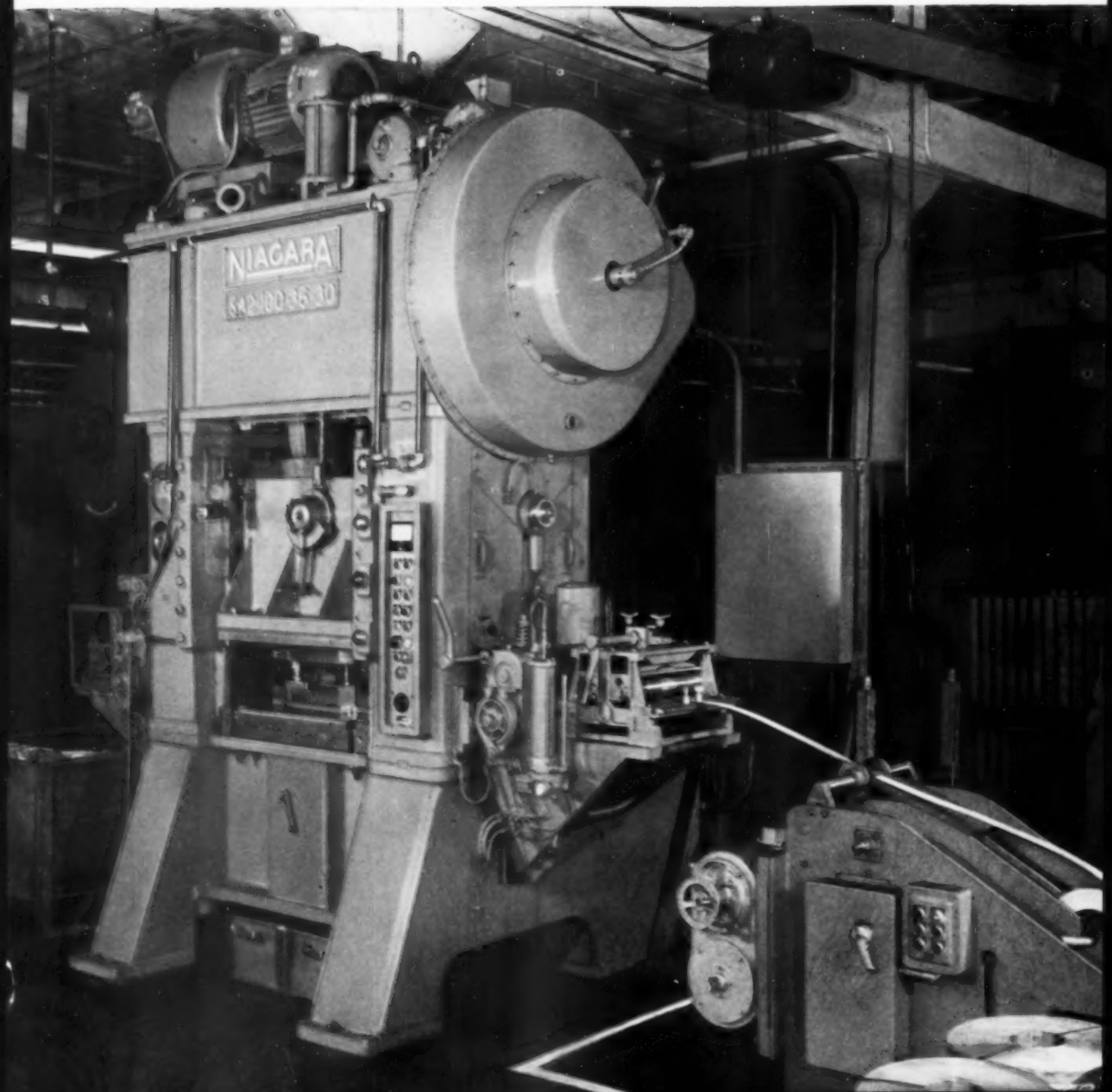
On the nearby shelves of your Industrial Supply Distributor

BAY STATE TAPS

Bay State Tap & Die Company • Mansfield, Massachusetts

Litho in U.S.A.

Ready for you... *ALL-NEW*



AUTOMATIC PRESS

to give you more stampings per hour at less cost... in long and short runs

Build your stamping profits to new heights the modern way: Automatically . . . with an all-new Niagara SA-2. Here's an up-to-the-minute press package that is distinctly different from anything heretofore available . . . complete with ultra-modern automatic feed, plus today's most advanced press mounted controls and devices, to bring you high speed stamping at its very best.

Brand new from crown to base, the Niagara Automatic boasts bonus features throughout . . . features that are unavailable on any other press in this category. Yes, *everything* is new about it, differing sharply from modified, adapted straight side presses of conventional design. Every square inch of its extra massive, rugged construction is *heavier . . . far heavier* for vibration-free, precision performance at high speeds:

KING SIZE CRANKSHAFT AND CRANKPINS — substantially larger than those on traditional straight side presses.

ENTIRE DRIVE IS HEAVIER — gears, electro pneumatic friction clutch, brake, flywheel and motor.

EXTRA BEARINGS — for better support of crankshaft, feed take-off and main gear (or flywheel).

MASSIVE, EXTRA HEAVY FRAME — all steel, 4-piece, tie rod, box type construction (bed, uprights and crown) built to absorb shock and vibration, and provide greater resistance to deflection. Up to 100% heavier than regular straight side press construction. Uprights extra wide to house electrical and circulating oil controls.

RIGID, EXTRA REINFORCED, BOX TYPE SLIDE remains in precise alignment with bed.

EXTRA LONG, SPECIAL SQUARE GIBS guide slide precisely.

LAMINATED, NON-METALLIC WAYS positively prevent welding or galling of bearing surfaces.

AUTOMATIC CIRCULATING OIL SYSTEM keeps all press bearing surfaces continuously lubricated.

ULTRA-MODERN AUTOMATIC FEED perfectly mated to press.

EXCLUSIVE NIAGARA MECHANICAL ROLL LIFTING SYSTEM — built into the press for independent, infinite adjustment of ingoing — outgoing rolls, from floor level.

OVERSIZE ADJUSTABLE AIR COUNTERBALANCE for smoother, safer press performance.

From start to finish, automatic stamping the Niagara SA-2 way, spells endless economies for you. It will pay you to investigate the facts *now*.

THE FULL STORY is unfolded for you, feature by feature, in new, illustrated Bulletin 264. Write for your copy today . . . then consult a Niagara representative.

NIAGARA MACHINE & TOOL WORKS, BUFFALO 11, N. Y.

DISTRICT OFFICES: Boston • Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia

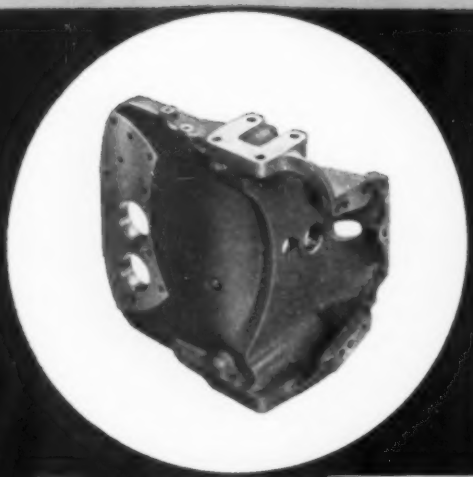
Distributors in principal U. S. cities and major foreign countries

NIAGARA

SERIES SA-2, TWO-POINT STRAIGHT SIDE PRESSES

SHAFT DIAMETERS: 4½-9 INCHES • CAPACITIES: 60-300 TONS

America's most complete line of presses, press brakes, shears, other machines and tools for plate and sheet metal work



At Massey-Harris-Ferguson

Natcos Save 100 Parts...

Three multiple-spindle Natcos bore, drill, spotface and tap the front end support for a Massey-Harris-Ferguson tractor

NATCO

60 Man Hours Every

on Rugged Axle Support Castings

Massey-Harris-Ferguson checked it two ways. Nine general-purpose machines would do the job—or 3 Natcos. They chose the Natcos for these reasons:

- *Saving of $30,000 in machine cost*
- *Saving of 60 man hours every 100 parts*
- *Saving of 65% in floor space*

The Natcos handle all drilling, boring, spotfacing and tapping—a total of 67 operations on the 182-pound front axle casting. The casting is heavy, irregular—tough to fixture and clamp. The Natcos meet production requirement of 11 parts per hour.

Natco provided complete tooling which features automatic clamping, cycling and chip blow-out. All three machines are of unitized construction, giving Massey-Harris-Ferguson the flexibility to run different parts of redesigns of the same part.

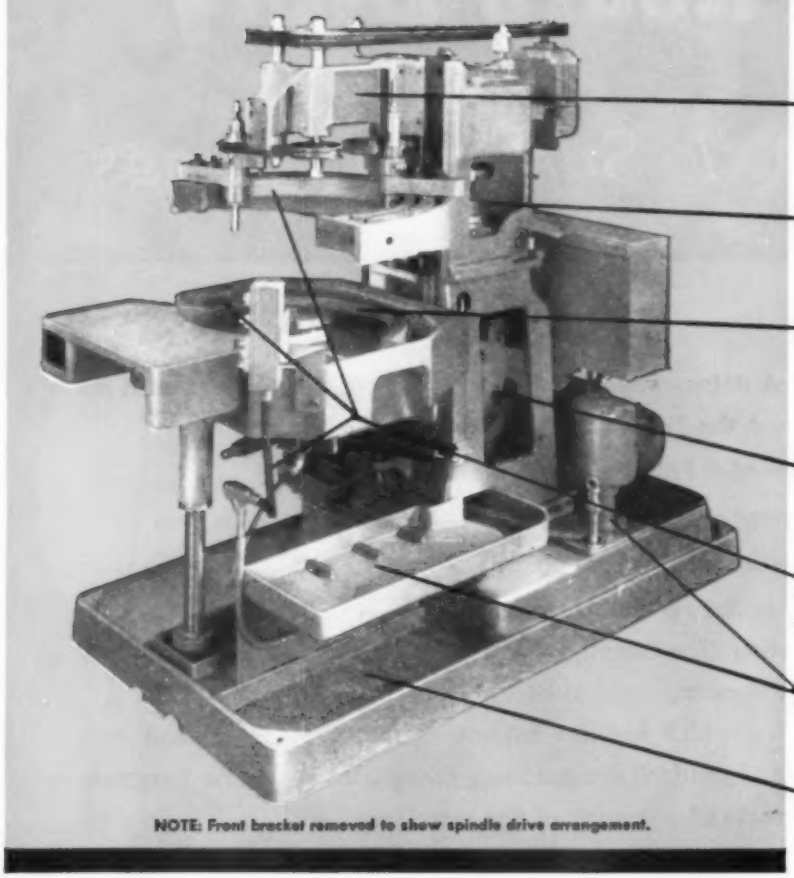
Let Natco Field Engineers point out cost-saving and time-saving methods on your next drilling, boring, facing or tapping job. Natco offices are located in Chicago, Detroit, New York, Buffalo, Boston, Philadelphia, Cleveland and Los Angeles; distributors in other cities.

National Automatic Tool Company, Inc.

Richmond, Indiana

Multiple-spindle drilling, boring, facing and tapping machines. Special way-type, index and transfer machines.

MULTIPLE TOOLING . . .
RAPID CHANGE-OVER . . .
WHEN YOU BUILD PRODUCTION MACHINES
AROUND Bodine



NOTE: Front bracket removed to show spindle drive arrangement.

BASIC UNITS

- Central and flexible jack shaft drive to vertical spindles.
- Variable, quick-change, cam-controlled, synchronized vertical motion.
- 6 standard interchangeable table indexes, from 10 to 24 stations.
- All power drive through SINGLE main shaft for simple timing and adjustment.
- Ample mounting surfaces for tooling and attachments. Tool mounting areas are standard, making all tooling interchangeable.
- Central coolant system.
- 4 standard Basic Machine sizes.

This is but one of many "usual" examples of exceptional Bodine Basic Unit versatility. It demonstrates how, with standard Bodine Basic Units, "special" machines can be built which combine all of the best features of modern high-speed, multiple-operation production, plus the important added feature of rapid change-over from production of one part to another.

Each of the five parts illustrated, while of different material and requiring an entirely different sequence of operations, was completely processed on this one Bodine. A simple change of dial tables and relocation of tooling kept production and production rates at an extremely high level, and at the same time reduced labor costs and machine down-time to an absolute minimum.

Write Dept. AM-1 today for details on Bodine high production flexibility . . . proved in the field by both large and small manufacturers.

2B0514L

for example... ONE BODINE MACHINE . . .

with 5 interchangeable index tables...
produces 5 *different* parts

a

Aluminum Die Casting: One piece per stroke

First Operation: Drill, counterbore and tap 3 holes. *Production: 600 pieces

Second Operation: Counterbore 1 hole, tap 3 holes, drill, ream, face and chamfer 2 holes in line. *Production: 600 pieces

b

Aluminum Die Casting: One piece per stroke

Operation: Drill and tap 4 holes, face 2 hubs. *Production: 750 pieces

c

Powdered Metal Casting (iron-copper mixture): One piece per stroke

Operation: Drill, ream and ball burnish 2 holes. *Production: 400 pieces

d

Steel (B-1113): One piece per stroke

Operation: Drill and countersink 4 holes, ream and tap 1 hole. *Production: 700 pieces

e

Steel (SAE 1012) Stamping: One piece per stroke

Two operations: Counterbore 4 holes, countersink 9 holes, ream and tap 1 hole. *Production: 1,000 pieces per operation

*Production rates are per 50-minute hour.

THE
Bodine
CORPORATION
BRIDGEPORT 5, CONNECTICUT

AUTOMATIC DIAL TYPE DRILLING, MILLING, TAPPING, AND SCREW INSERTING MACHINES

2BD56R

Here is

INFISPEED...

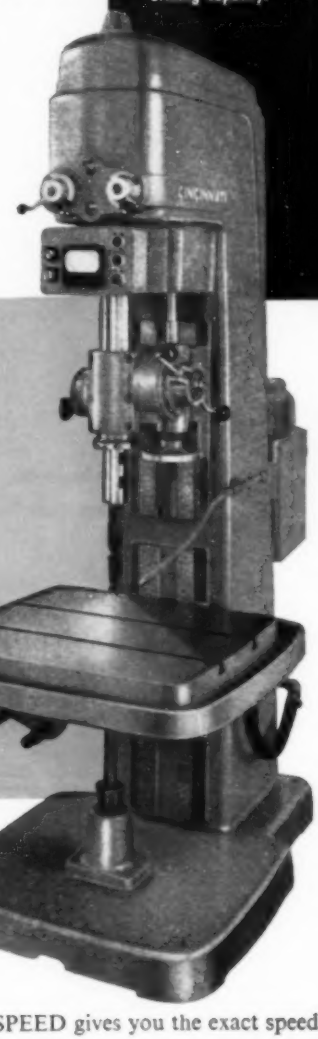
a **new** profit maker

built into

CINCINNATI

Sliding Head Drills!

HEAVY DUTY Models in 21" and 25" sizes; floor type; box column in single and multiple spindle, round column in single spindle only. 60 to 1825 rpm with 3 hp motor, 1½" drilling capacity.



MEDIUM DUTY Models in 16" and 24" sizes; bench and floor types, single and multiple spindle. 450 to 3000 rpm, with 1 hp motor, 1" drilling capacity.

New INFISPEED gives you the exact speed you need for each drilling job; infinitely variable spindle speeds within the speed range. Fast operating too! Speed change control is right on the front of the machine, with all other controls. Adjacent tachometer shows exact rpm's.

Cincinnati INFISPEED Sliding Head Drills are built in four sizes, with all of the well-known Cincinnati profit-making features included, of course. Ask your CL&T dealer for details, or write us direct.

Improved Machining Through Research

CINCINNATI LATHE AND TOOL CO.

3207 Disney Street • Cincinnati 9, Ohio

"Tray-Top" Lathes/"Cincinnati" Drilling Machines/"Spiropoint" Drill Sharpeners

FOOT SWITCHES that can take it!

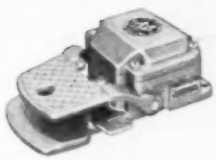
• **BUILT FOR THE TOUGHEST SERVICE** inside and out—from the maintenance free, snap action, double break, silver alloy contacts to the rugged, die cast aluminum housing—the redesigned Allen-Bradley Bulletin 805 foot switch is a challenge to tough jobs! The on-center treadle operation eliminates the need for bolting down the switch—the extended base keeps it from tipping.

• **VERSATILE OPERATION**—The contact trip point is easily adjustable. When equipped with two contact blocks, this foot switch can be set for simultaneous or two-stage operation. The Bulletin 805 foot switch can also be furnished with a latch to provide maintained contact operation. In addition, this latch, when desired, can be made inoperative, and may be quickly changed from one to the other side of the foot switch.

The Bulletin 805 housings are available for NEMA Type 4 watertight and oiltight applications, or NEMA Type 7 explosion-proof service.

Try the Allen-Bradley Bulletin 805 foot switch—you'll find it "tops" in its field. Send for full information.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.



Bulletin 805 Style A switch with latch.

Bulletin 805 Style A switch with latch and top guard to prevent accidental operation.

Bulletin 805 Style A switch with latch and guard covering both top and sides.

ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

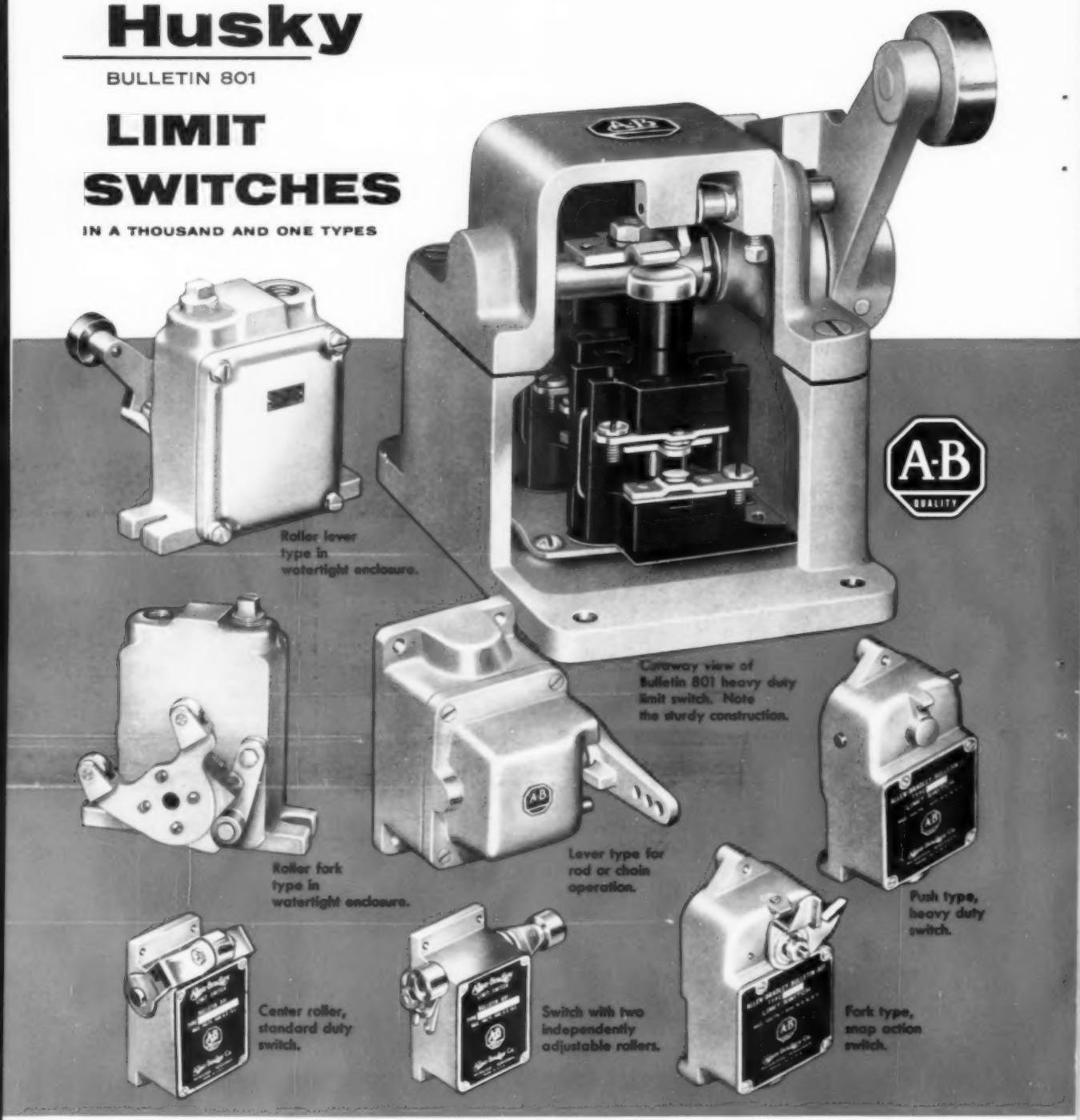
1-58-MR

Husky

BULLETIN 801

LIMIT SWITCHES

IN A THOUSAND AND ONE TYPES


A-B
QUALITY
Roller lever type in watertight enclosure.
Roller fork type in watertight enclosure.
Cutaway view of Bulletin 801 heavy duty limit switch. Note the sturdy construction.
Lever type for rod or chain operation.
Push type, heavy duty switch.
Center roller, standard duty switch.
Switch with two independently adjustable rollers.
Fork type, snap action switch.

From among the hundreds of Allen-Bradley Bulletin 801 general purpose limit switches, you're sure to find your exact requirements. There are 21 different contact arrangements available, including types with single or multiple poles, N.O. and N.C. contacts, spring return or maintained contacts, with either a slow or snap action mechanism. It will pay you to know this *quality* line of limit switches. If you do not already know this quality line, let's get acquainted. Write for the complete story.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

1-58-MR

HARDINGE
ELMIRA, N.Y.

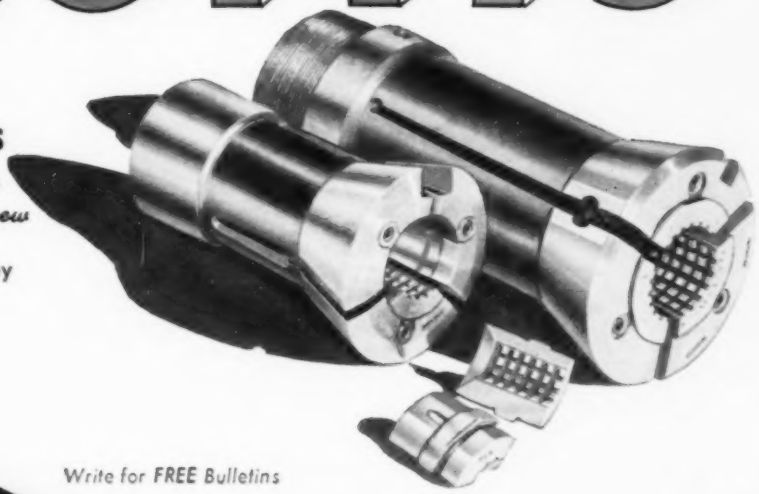
MASTERS and PADS

FOR BETTER PERFORMANCE — BETTER PRODUCTION

AND

PROFITS

STYLE "S"
MASTER COLLETS and PADS
The Only Master Collet with
No Work Pressure On The Screw
Available For: Cleveland-Cone
Greenlee—Gridley and Acme-Gridley
National Acme—New Britain
Warner & Swasey



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MASTER FEED FINGERS and PADS
Pads Cannot Work Loose
No Screws — No Pins
Available For: Brown & Sharpe
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Elmira, Boston, Atlanta, New York, Hartford, Philadelphia, Rochester, N. Y., Dayton, Detroit, Minneapolis, Chicago, St. Louis, Oakland, Los Angeles, Toronto, Montreal

HARDINGE BROTHERS, INC., ELMIRA, N. Y.

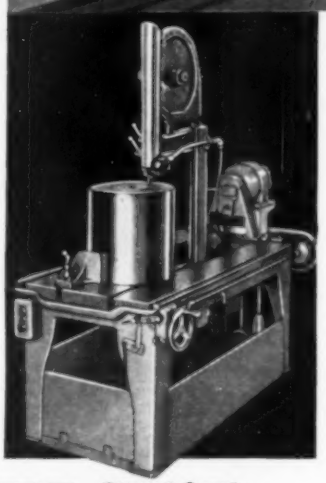
MARVEL NO. 8 BAND SAW makes a tough job EASY...

FLOOR TO FLOOR IN 5 HOURS... no special jigs, fixtures or set-up required

The versatility, simplicity of operation and unmatched efficiency of a MARVEL No. 8 Universal Metal Cutting Band Saw makes it the best all-around saw you can buy.

Take the job illustrated, as an example. Three equally spaced re-entrant cuts were required to segment a large, heavy die forging. The work was merely placed on the table between the vise jaws with the first lay-out line positioned to bisect the blade. Feed pressure was set on the direct-reading scale and the cut started. On a MARVEL No. 8, the work is always stationary and the blade is fed into the work; the cutting edge of the blade is always square with the table throughout its full feed traverse, which eliminates the need for special fixtures. The pre-set Automatic Overload-Relief Power Feed kept the blade moving into the work only as fast as it could freely remove the metal; as the vertical length of the cut decreased, the blade was automatically fed faster, thus increasing cutting speed. Upon completion of a cut, the blade was rapidly returned to its starting position by a rapid traverse handwheel located at the operator's position. Succeeding cuts were made in the same manner, with the same ease and speed.

Jobs like this aren't done every day, but they serve to emphasize the versatility of the MARVEL No. 8, a truly universal metal cutting saw. If you cut, machine or fabricate metal, this is a sawing machine you should know about. Write for catalog.



ARMSTRONG-BLUM MFG. CO.
5700 BLOOMINGDALE AVE. · CHICAGO 39, ILL.

MARVEL Metal Cutting SAWS
Better Machines-Better Blades

S-1302

Lightning fast speed change

a money making virtue!

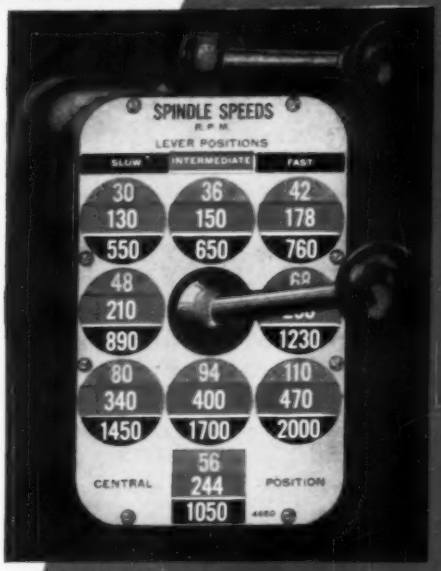
This time saving feature of "AMERICAN" Pacemaker Lathes appeals strongly to operators who acclaim it a real money maker for them.

The speed plate is direct reading and shows at a glance the available spindle speeds and how to secure them. Operators can't go wrong. So fast, so easy to read and so simple that they do not hesitate to make speed changes to secure correct cutting speeds.

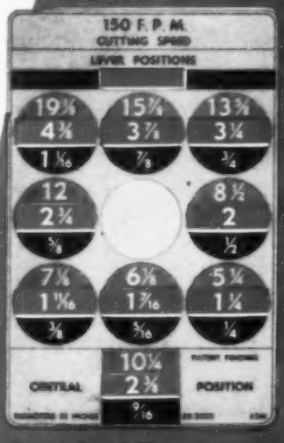
In addition, cutting speed snap-on plates are available indicating the lever positions for cutting various work diameters at the selected feet per minute cutting speed. These plates may be quickly applied and changed for the desired cutting speed.

No system for securing cutting speeds could be simpler, faster or less expensive in first cost and maintenance.

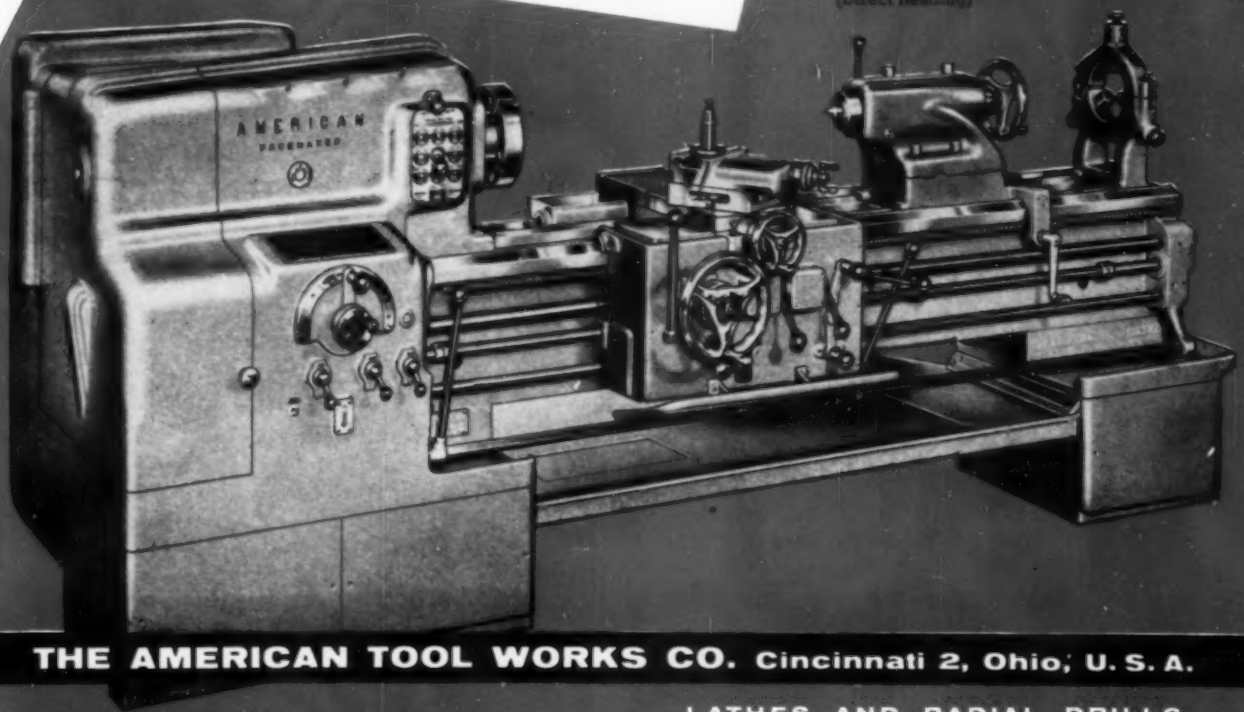
- *These and other fine features of the "AMERICAN" DeLuxe Model Pacemaker are illustrated and described by Bulletin No. 116.*



Spindle Speed Plate (Direct Reading)



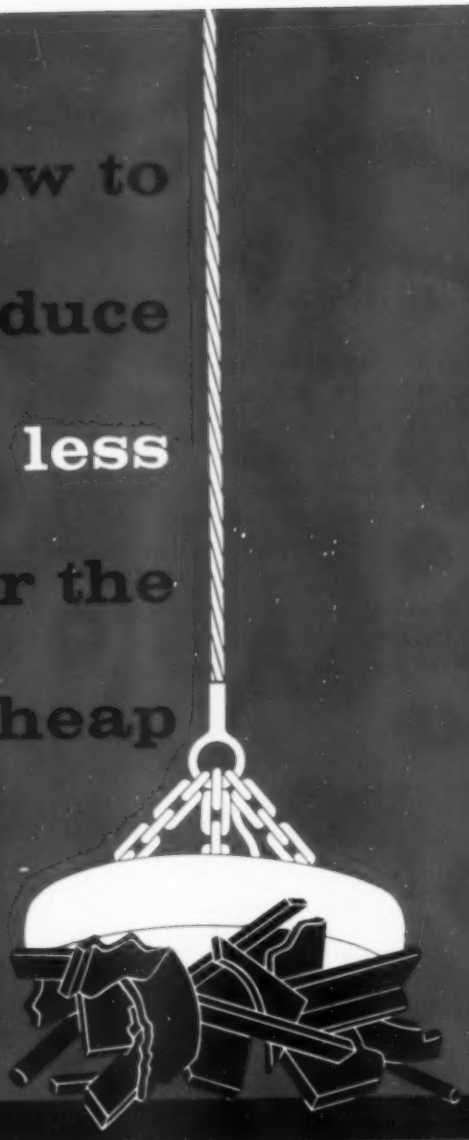
Cutting Speed Plate (Direct Reading)

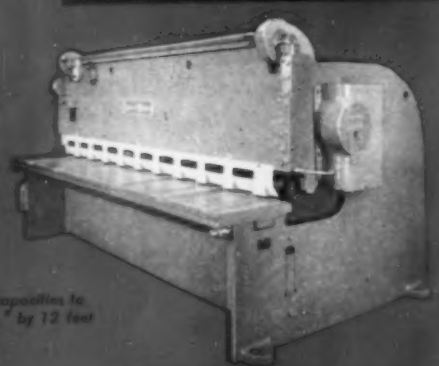


THE AMERICAN TOOL WORKS CO. Cincinnati 2, Ohio; U. S. A.

LATHES AND RADIAL DRILLS

how to produce less for the scrap heap





capacities to ½" by 12 feet

your LODGE-ical choice...

Lodge & Shipley

Check your scrap "production." A certain amount of scrap is to be expected. But, if your scrap heap is growing out of bounds chances are, your shear is a contributor.

Even a skilled operator is at the mercy of a "cranky," inaccurate shear. Put the same operator on a Lodge & Shipley Shear with "built-in" accuracy and watch production flow. Lodge & Shipley Power Squaring Shears are proved for accurate shearing . . . produce far less for the scrap heap and far more for production.

For details, request New Condensed Catalog PS-13. Write: The Lodge & Shipley Co., 3056 Colerain Ave., Cincinnati 25, Ohio

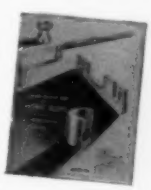
HAYNES Alloys solve the *tough* wear problems

HANDLES 130 TONS of hot abrasive mixture without appreciable wear

A custom-tailored "Nose" made of HAYNES STELLITE alloy increased the service life of an extrusion torpedo by more than 10 times. The torpedo heats an abrasive mixture of thermoplastic resins containing finely ground limestone and red slate to about 400 deg. F as it is extruded under an 8000-psi pressure. The hot, abrasive material flows over the nose of the torpedo at the rate of 1.5 in. per second.

At one time an alloy steel torpedo, heat-treated to Rockwell C-35, was used in this application. It suffered extreme wear after handling only 13 tons of the mixture. A tool steel nose gave no better service. The nose made of HAYNES STELLITE alloy showed no wear after processing 45 tons of material, and is still in use after processing over 130 tons.

There are over 20 HAYNES alloys specifically designed to resist heat, corrosion, abrasion, or erosion, that can be shaped to your specifications and furnished ready to use. For literature, write to HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, Kokomo, Indiana. For on-the-job assistance, contact one of our district offices located in Chicago, Cleveland, Detroit, Houston, Los Angeles, New York and San Francisco.



The original torpedo, constructed of conventional materials, is well-worn after handling only 13 tons of the abrasive mixture.

Ten times the life and still no sign of wear is the record made by the HAYNES STELLITE alloy No. 3 part, shown above.

HAYNES ALLOYS

HAYNES STELLITE COMPANY

Division of Union Carbide Corporation

Kokomo, Indiana

UNION CARBIDE

The terms "Haynes," "Haynes Stellite" and "Union Carbide" are registered trademarks of Union Carbide Corporation.

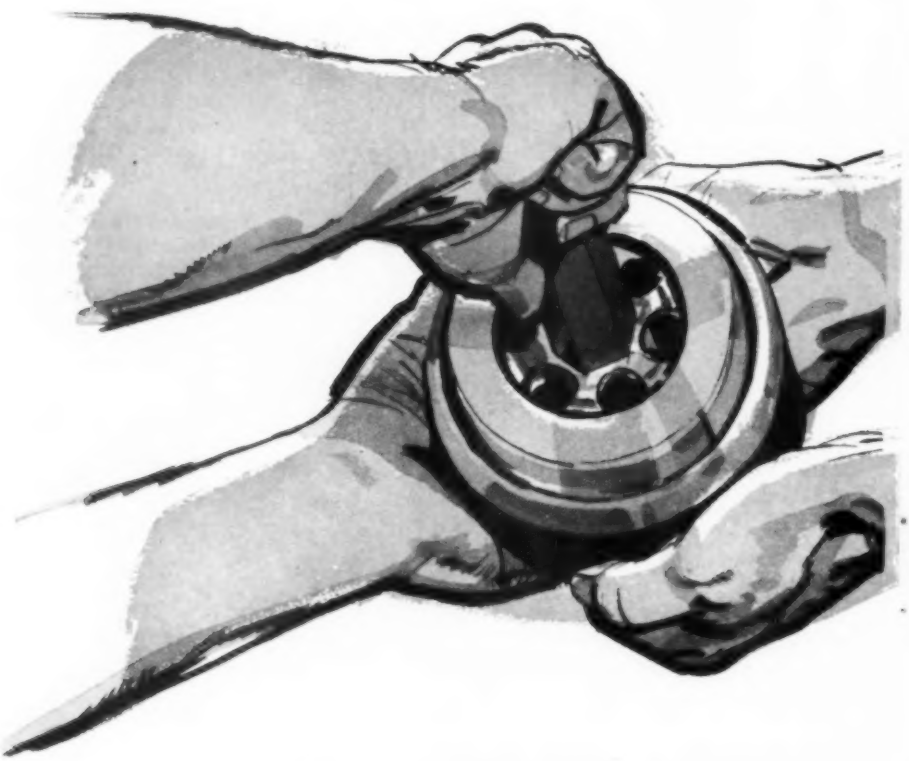
Look what

production increases

this company got with

STANICOOL
HD Soluble Oil

PRODUCTION MANUFACTURING COMPANY DOUBLED NUMBER OF THREADS CUT BETWEEN CUTTER SHARPENINGS, SCORED OTHER PRODUCTION GAINS

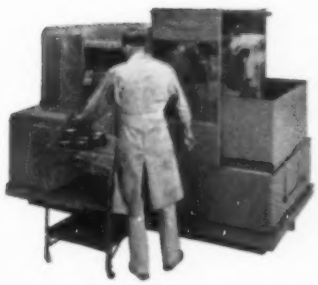


Situation: O. C. Patterson, vice president of Production Manufacturing Company, Tulsa, wanted to cut down on the number of metalworking products used in the plant. He wanted to use just one oil for cutting SAE 1025 steel, screw stock and SAE 440 stainless steel.

Action taken: Checking with Standard Oil lubrication specialist, R. J. MacMurray, Mr. Patterson learned about STANICOOL HD Soluble Oil. A test was set up on a Warner & Swasey automatic bar machine. Roger MacMurray helped set up equipment for the test and helped work out the right STANICOOL HD and water mixtures for the types of metal used. A 4:1 mix for 1025 steel, and up to 10:1 for other metals and jobs was decided upon.

What happened: Parts were threaded on the bar machine that Production Manufacturing had previously been unable to thread. On a new Warner & Swasey AC chucker, it was found STANICOOL made possible threading at a speed of 35 surface feet per minute. With STANICOOL HD 150 threads could be cut before the cutter needs to be sharpened. Only 75 threads could be cut before. Plant management found STANICOOL also protected work from rust while it went through many additional shop operations.

To find out more: All the facts about STANICOOL HD Soluble Oil are yours. Just call your nearby Standard Oil lubrication specialist in any of the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**



No trouble. Pressure coupling is checked by O. C. Patterson, vice president of Production Manufacturing, Standard Oil's Roger MacMurray and foreman Byron Finley. Roger MacMurray helped the men in this plant find a new route to production increases with **STANICOOL HD** Soluble Oil. That's his job, and he's well equipped for it. Eight years' experience in such work, an engineering degree from the University of Colorado and completion of the Standard Oil Sales Engineering School are his qualifications.

Quick facts about

STANICOOL HD Soluble Oil

- Has E. P. and oiliness properties comparable to cutting oil.
- Contains germicide that controls bacteria build-up.
- Is nonirritating to skin.
- Protects machines, tools and work against rust and gumming.
- Will not gel in cold weather, has excellent emulsion stability.

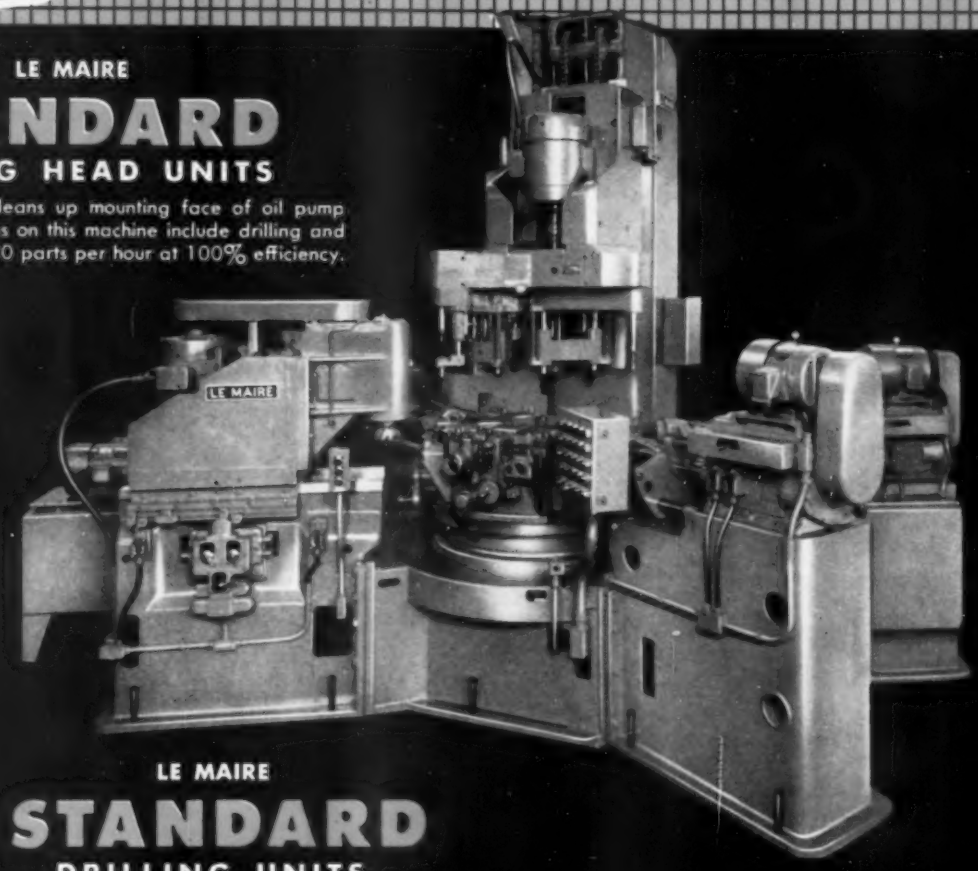
You expect more from STANDARD and get it!

PRODUCING

LE MAIRE

STANDARD
MILLING HEAD UNITS

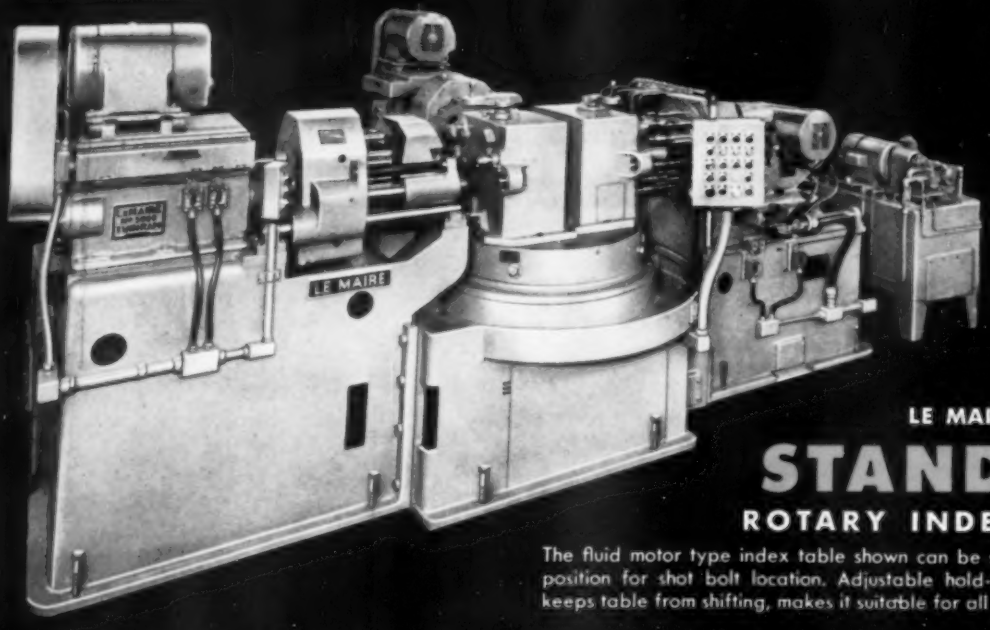
Vertical milling head cleans up mounting face of oil pump covers. Other operations on this machine include drilling and reaming. Production is 90 parts per hour at 100% efficiency.



LE MAIRE

STANDARD
DRILLING UNITS

Multiple tooling on standard units performs drilling, reaming, counterboring and tapping of 75 flywheels hourly. While units shown are quill type, LeMaire also manufactures standard way type units.



LE MAIRE

STANDARD
ROTARY INDEX TABLES

The fluid motor type index table shown can be set to stop in exact position for shot bolt location. Adjustable hold-down arrangement keeps table from shifting, makes it suitable for all types of machining.

with LE MAIRE

STANDARD BUILDING BLOCKS

Give You Economy . . . Flexibility . . . Simplicity

Before you automate . . . *investigate* the complete LeMaire line of standard hydraulic power units. Each is practical, efficient, economical . . . and nearly as flexible in application as a standard electric motor!

These LeMaire "building blocks" are designed for interchangeable installation on a wide variety of standard bases. This allows low-cost unitized construction, in minimum lead time, of a "special" which solves *today's* production machining problem . . . and which can be economically converted or modified to meet *future* needs.

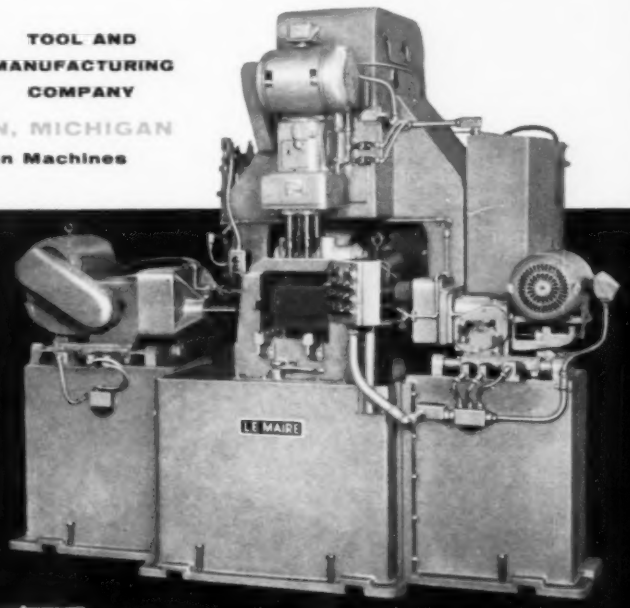
LeMaire standard units are suitable for drilling, boring, counterboring, reaming, spot-facing, tapping and milling. They operate in horizontal, vertical or angular positions. Infinite control of feeds is provided, along with construction which assures twist-free, straight line, uniform operation under all production conditions. All units are built to J.I.C. standards.

For practical, economical, flexible automation, check the possibility of using LeMaire "do-it-yourself" building blocks . . . or ask LeMaire engineers to recommend the right combination for your specific production machining problem. Send parts or prints for prompt recommendations.

LE MAIRE TOOL AND MANUFACTURING COMPANY

2657 S. TELEGRAPH ROAD • DEARBORN, MICHIGAN

Designers and Builders of Special High-Production Machines

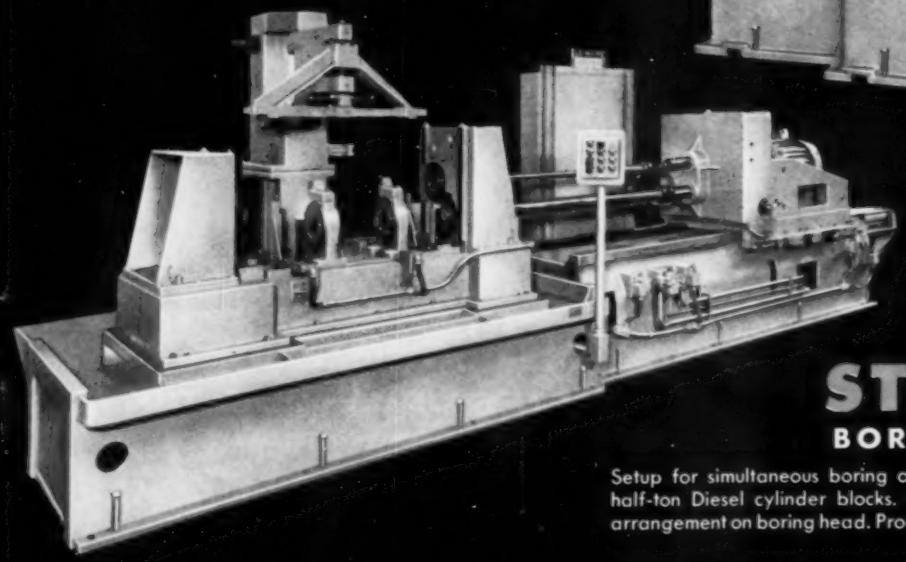


LE MAIRE

STANDARD

LEAD SCREW TAPPING UNITS

Four sides of farm tractor hydraulic reservoir are tapped at once by this machine, arranged with various size master lead screw tapping units. Production is 56 parts per hour at 100% efficiency.

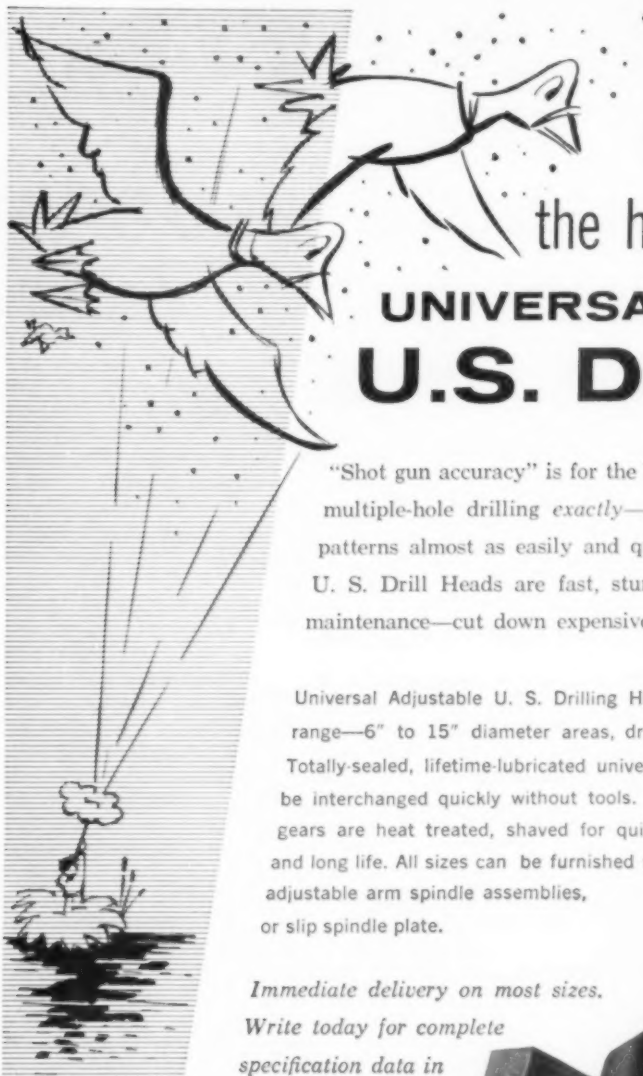


LE MAIRE

STANDARD

BORING HEAD UNITS

Setup for simultaneous boring of camshaft and crankshaft bores in half-ton Diesel cylinder blocks. Way type unit has tool positioning arrangement on boring head. Production is 9.4 cylinder blocks per hour.



You **KNOW** where the holes will be . . . with

UNIVERSAL ADJUSTABLE

U.S. Drill Heads

"Shot gun accuracy" is for the birds. With U. S. Heads you pin-point your multiple-hole drilling *exactly*—position the drilling spindles for different patterns almost as easily and quickly as you read them from your prints. U. S. Drill Heads are fast, sturdy, long-lived and require only minimum maintenance—cut down expensive re-operating cost, too!

Universal Adjustable U. S. Drilling Heads cover a wide range—6" to 15" diameter areas, drill sizes up to 1-1/16". Totally-sealed, lifetime-lubricated universal joints can be interchanged quickly without tools. Stub tooth gears are heat treated, shaved for quiet operation and long life. All sizes can be furnished with adjustable arm spindle assemblies, or slip spindle plate.

Immediate delivery on most sizes. Write today for complete specification data in new catalog No. AD-57.

Style U-1L Universal Adjustable Head provides 9" diameter drilling area.

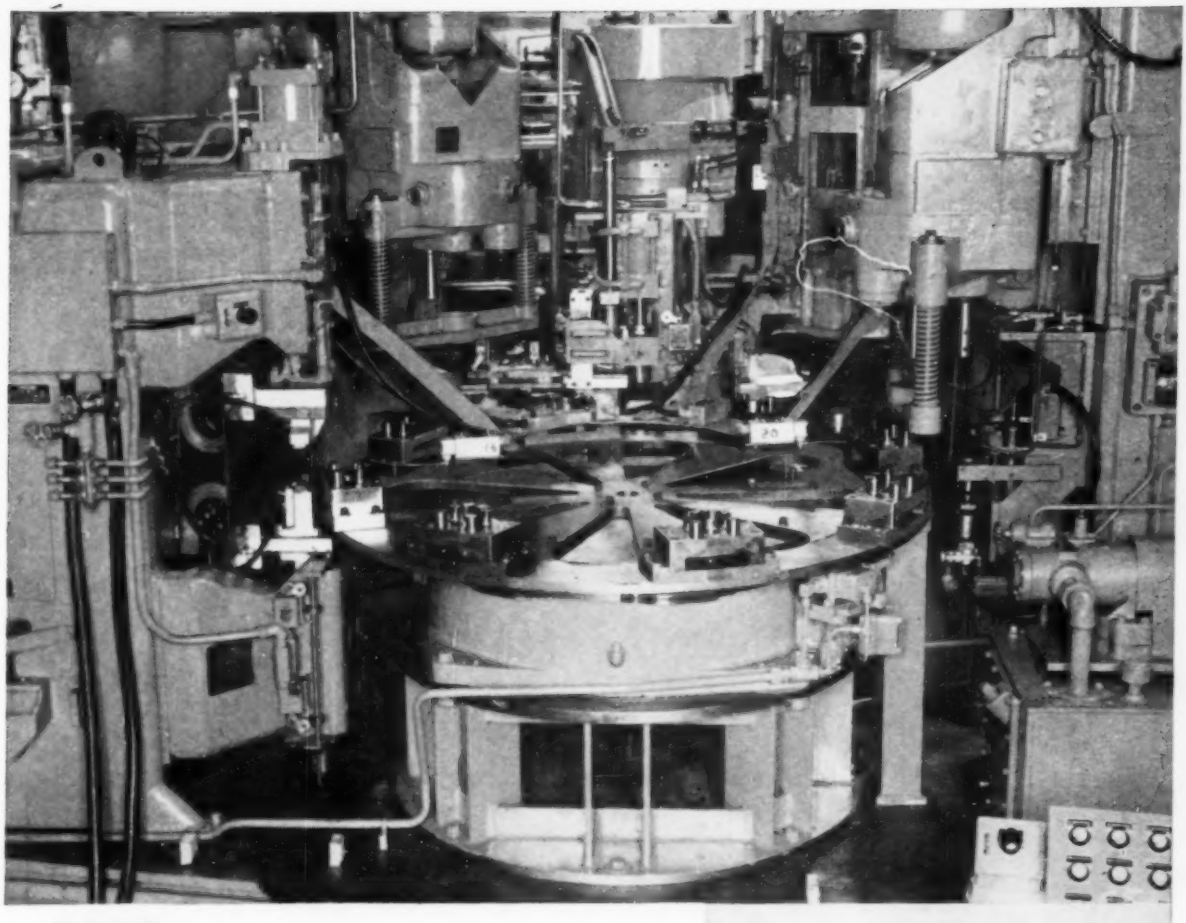
FOR MEN WHO KNOW DRILL HEADS BEST, IT'S ALWAYS U.S. DRILL HEAD...5 to 1.

We manufacture all types of adjustable, fixed center and individual lead screw tapping heads. Ask us to help solve your multiple drilling and tapping problems.

US DRILL HEAD

UNITED STATES DRILL HEAD CO.

BURNS STREET • CINCINNATI 4, OHIO



THIS NATIONAL ELECTRIC MULTI-STATION DIAL FEED MACHINE

paid for itself in 9 months!

52

Loading, resistance welding, hydraulic reaming, hopper feeding, pressing, hot upsetting and hollow milling are the seven operations—performed automatically—on automotive brake backing plates by this one National Electric Dial Feed Machine. The installation of this unit, by an automobile manufacturer, not only released eight machines for other production, but saved a corresponding amount of floor space as well.

This is only one example of the money and man-hour savings realized when National Electric Automatic Welding Machines are employed. National Resistance Welders, Gas-shielded Arc Welders and Submerged Arc Welders . . . meet the high-speed assembly-line methods and close tolerances demanded throughout American Industry. A National Electric Welding Machine can be developed to fill requirements of any volume welding job. Write today for information.

NATIONAL
ELECTRIC WELDING MACHINES CO.
1860 N. TRUMBULL STREET
BAY CITY, MICHIGAN

25 YEARS EXPERIENCE DESIGNING AND BUILDING: SPECIAL & STANDARD • AIR • HYDRAULIC • MOTOR DRIVEN • SPOT • PROJECTION • SEAM • BUTT • FLASH • RESISTANCE WELDERS • PRODUCTION FIXTURES FOR ALL TYPES OF AUTOMATIC ARC WELDING.

As these caps are uniform

...So Card taps and gages are uniform, too

Your production's consistent ...because Card taps are uniform

Your first step in consistent production performance is the cutting tool itself. Because Card taps are identical they keep production perfect — and predictable. Shopmen know all about the uniformity of Card taps. The gages are like that, too. S. W. Card Division, Mansfield, Mass. Card Warehouses: Atlanta, Chicago, Detroit, Fort Worth, Los Angeles, New York, San Francisco.

The CARD Quality

CARD

DIVISION OF UNION TWIST DRILL COMPANY

— Serving you through the best distributors from Coast to Coast

If you use drills as much as paper mills use pulp...

This brand cuts down your drill usage, production time and costs!

The more you use drills the more you need Union

Union's top quality drills reduce your production costs to the lowest per hole on every drilling job. Union also manufactures milling cutters, gear cutters, end mills, reamers, hobs, carbide tools and inserted blade cutters. Available nationally through Union Distributors and stocked in Union warehouses in Atlanta, Chicago, Detroit, Fort Worth, Los Angeles, New York City and San Francisco.

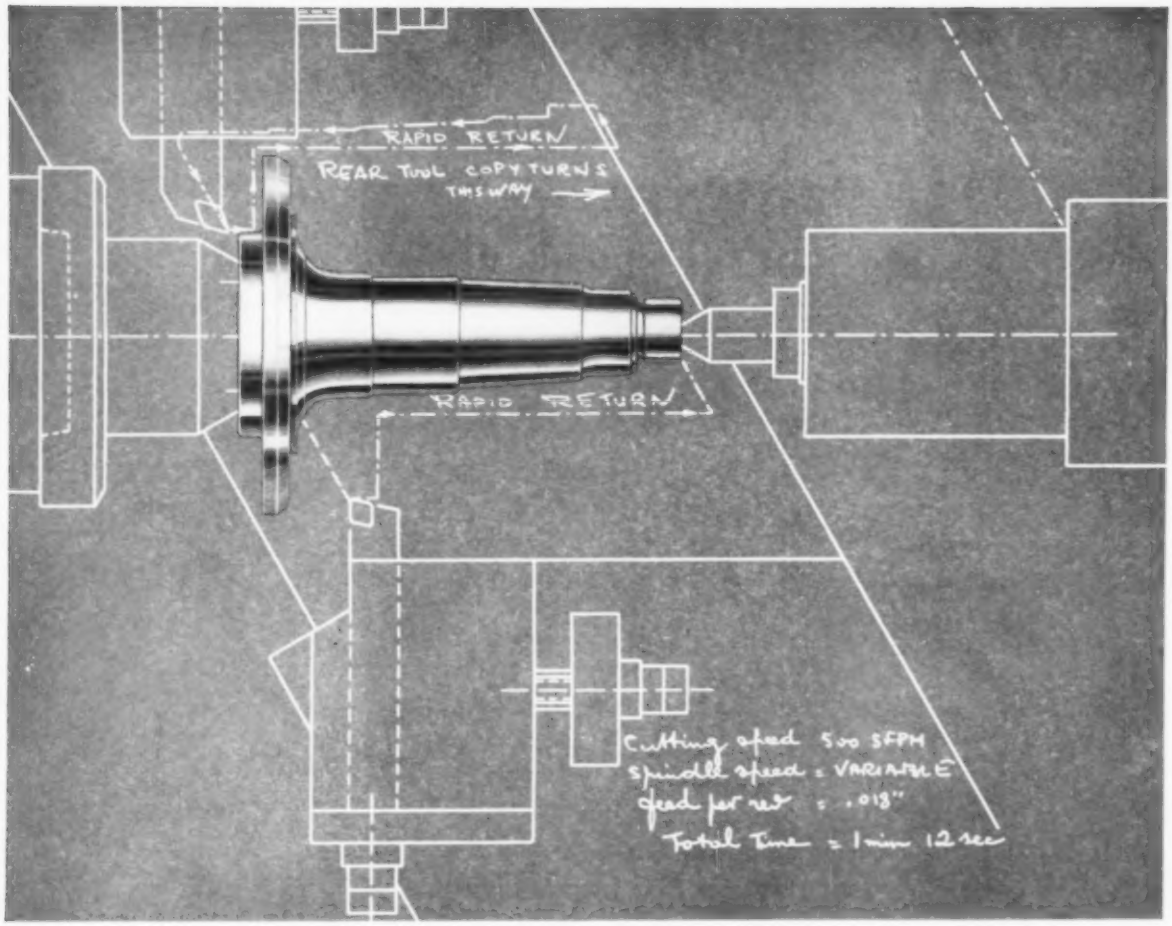
UTD

UNION

TWIST DRILL COMPANY, Athol, Massachusetts

S.W. CARD DIVISION, Mansfield, Mass.; BUTTERFIELD DIVISION, Derby Line, Vt.

See Your UNION DISTRIBUTOR for cutting tools that will save you time and money

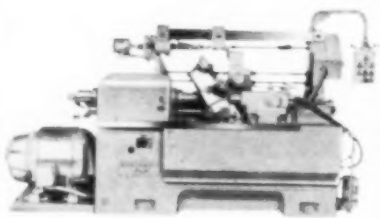

RAPID RETURN
REAR TOOL COPY TURNS THIS WAY
RAPID RETURN
Cutting speed 500 SFPM
spindle speed = VARIABLE
feed per rev = .013"
Total Time = 1 min 12 sec

Without special tooling the Conomatic Pilot can copyturn a 90° reverse shoulder like this

With the Conomatic Pilot copying lathe, you can copyturn a 90° reverse shoulder with a single cross slide. Although this hydraulically-controlled multicycling lathe can be equipped with as many as two infeed slides and two cross slides, its ability to copyturn in reverse often makes costly special tooling unnecessary.

For example, the 90° reverse shoulder on the automatic transmission part shown above is copyturned in reverse by the rear tool on the 60° cross slide when the lathe's motorized template indexes after the front tool has completed its pass. Total time is 1 minute 12 seconds, with a gross production of 50 pieces per hour.

Write us today for a brochure giving details and specifications of the Conomatic Pilot—the world's most versatile copying lathe.



The Conomatic Pilot Model KU: A hydraulically-controlled multicycling copying lathe with piloted hydraulic feed that provides constant feed per revolution. Motorized rotating template provides up to four passes and four rapid returns or four additional passes in reverse. Adapted to completely automated loading and unloading.

Conomatic

CONE AUTOMATIC MACHINE CO., INC., WINDSOR, VT.

PILOT DIVISION

30 Rockefeller Plaza, New York 20, N. Y.

XLO EX-CELL-O FOR PRECISION

B

C

A

D

F

A. Standard DB 24 Spindle
B. DB 50 Motorized Spindle
C. DB 25 Square Body Spindle
D. DB 50 Motorized Quill-Type Spindle
E. DB 22 Square Body Spindle
F. Standard DB 22 Spindle

E

57-90

Greater Accuracy—with Ex-Cell-O Precision Boring Spindles

No one need tell you of the proven superiority of Ex-Cell-O precision boring spindles where close tolerances and fine finishes are required. But, did you know that these same Ex-Cell-O boring spindles have been used as replacement units for years?

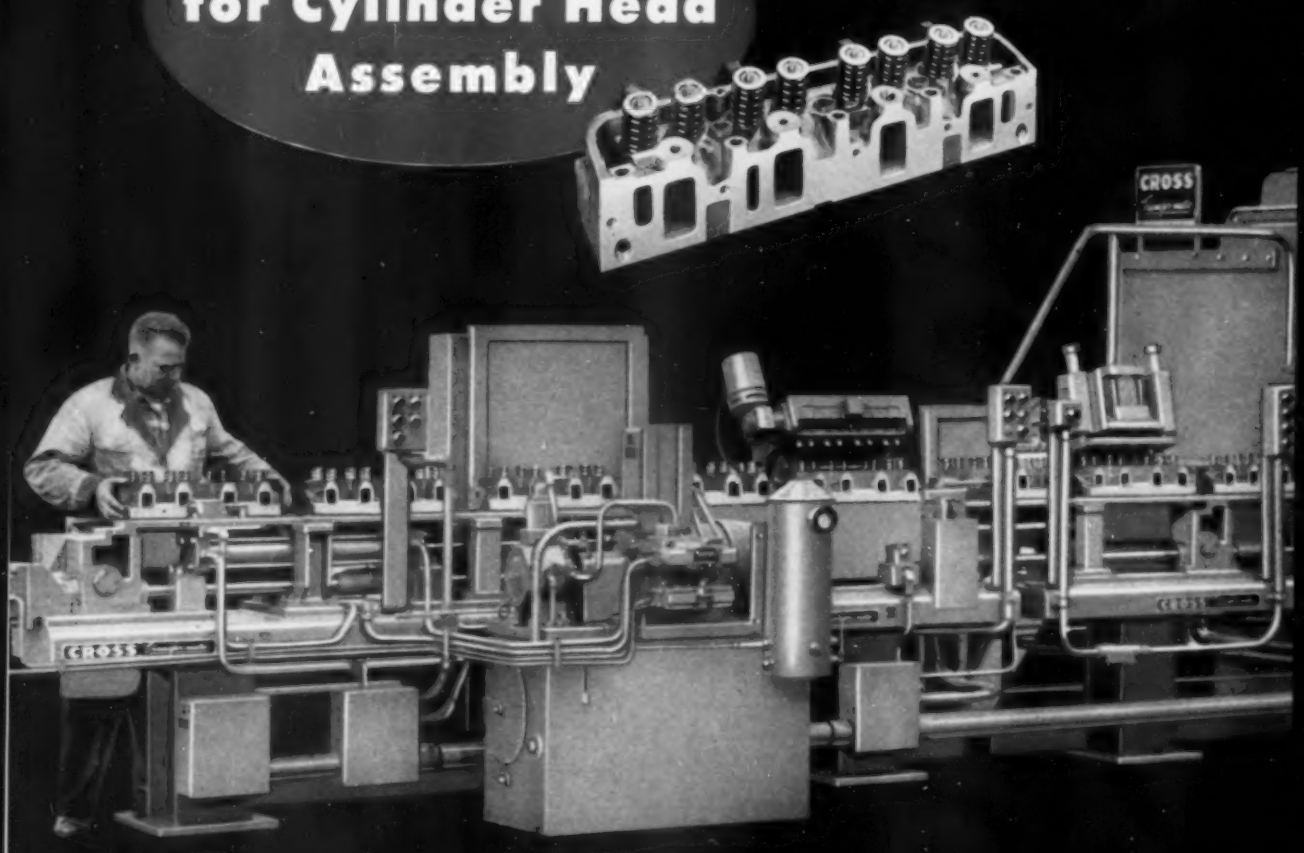
Produced in belt-driven, standard motorized, or high frequency motorized styles, these Ex-Cell-O precision spindles are equipped with XLO Precision bearings for maximum spindle rigidity, long life and smooth operation. Permanent bearing lubrication reduces maintenance costs, prolongs bearing life.

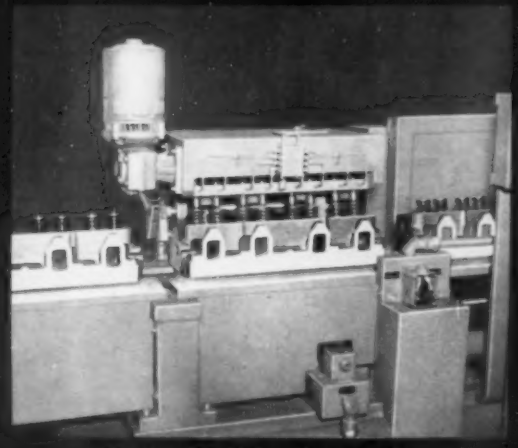
For complete information, why not get in touch with your local Ex-Cell-O representative or, if you prefer, send direct for bulletin 25477.

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN
Machinery Division

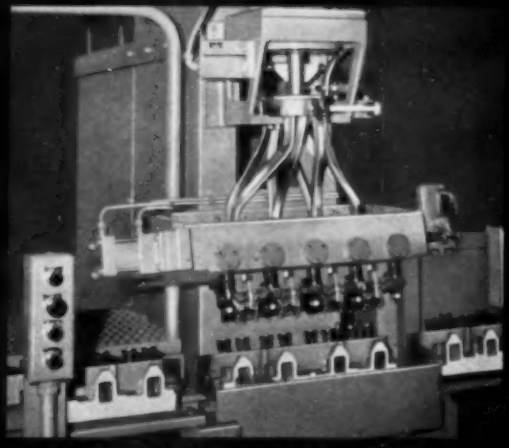
MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES
CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

Automation for Cylinder Head Assembly



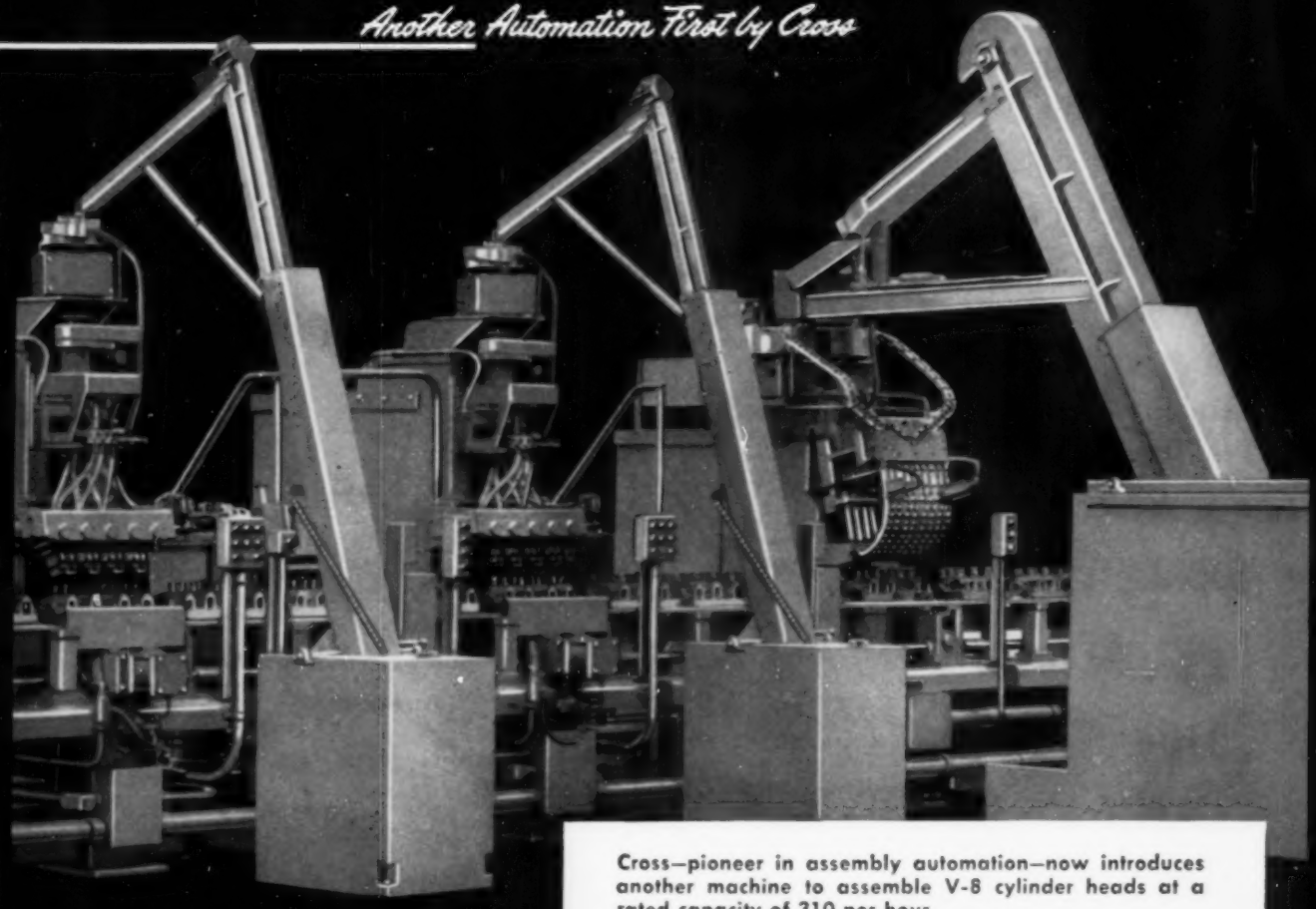


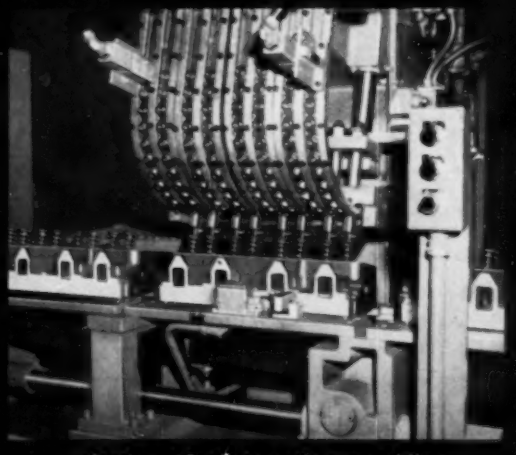
Station 25: Valve "popping".



Station 17: Automatic assembling of valve locks.

Another Automation First by Cross





Station 13: Automatic assembling of valve spring retainers.

Cross—pioneer in assembly automation—now introduces another machine to assemble V-8 cylinder heads at a rated capacity of 310 per hour.

Cylinder head castings with intake and exhaust valves in place are loaded automatically at Station 1. At Stations 3, 4, and 5, rubber grommets are placed over the valve stems. At Station 7, an inspection is made for faulty valves and grommet positioning. If necessary, heads are removed, repaired and returned at Stations 8, 9, and 10. Valve springs, spring retainers and spring retainer sleeves are automatically assembled at Stations 11, 13, and 15 respectively. Valve locks are automatically assembled at Stations 17 through 23 with standby units for manual assembly at Stations 19 and 23. At Station 25, all valves are "popped" before unloading the finished assemblies at Stations 27, 28 and 29.

A unique feature of the machine is the transfer mechanism which lifts and carries the parts between stations to eliminate pallet fixtures used by older assembly machines.

Building block construction provides flexibility for engine design changes and for additional automatic assembly devices of the future.

Like other Cross machines, all parts—even tooling details—are made to interchangeable tolerances for fast, easy maintenance. Other features include construction to JIC standards and automatic lubrication.

Established 1898

THE **CROSS** CO.

First in Automation

PARK GROVE STATION • DETROIT 5, MICHIGAN

COMPARE!

the inside design features of 4 leading dial indicators

COMPARATIVE ANALYSIS OF SEVEN ESSENTIAL INDICATOR COMPONENTS

	SPINDLE HARDNESS	PINION TEETH HARDNESS	PIVOT HARDNESS	BRONZE BEARINGS	REMOVABLE BEARINGS	SHOCKPROOF AT SPINDLE	SHOCKPROOF AT NO EXTRA COST
STANDARD GAGE	RC 59	RC 55	RC 55	YES	YES	YES	YES
MAKE A	RC 25	RC 55	RC 55	No	No	No	No
MAKE B	RC 25	RC 25	RC 25	No	No	No	No
MAKE C	RC 43	RC 43	RC 43	YES	YES	YES	No

● INDICATES HIGHEST RATING

HARDNESS READINGS FROM ROCKWELL "C" SCALE

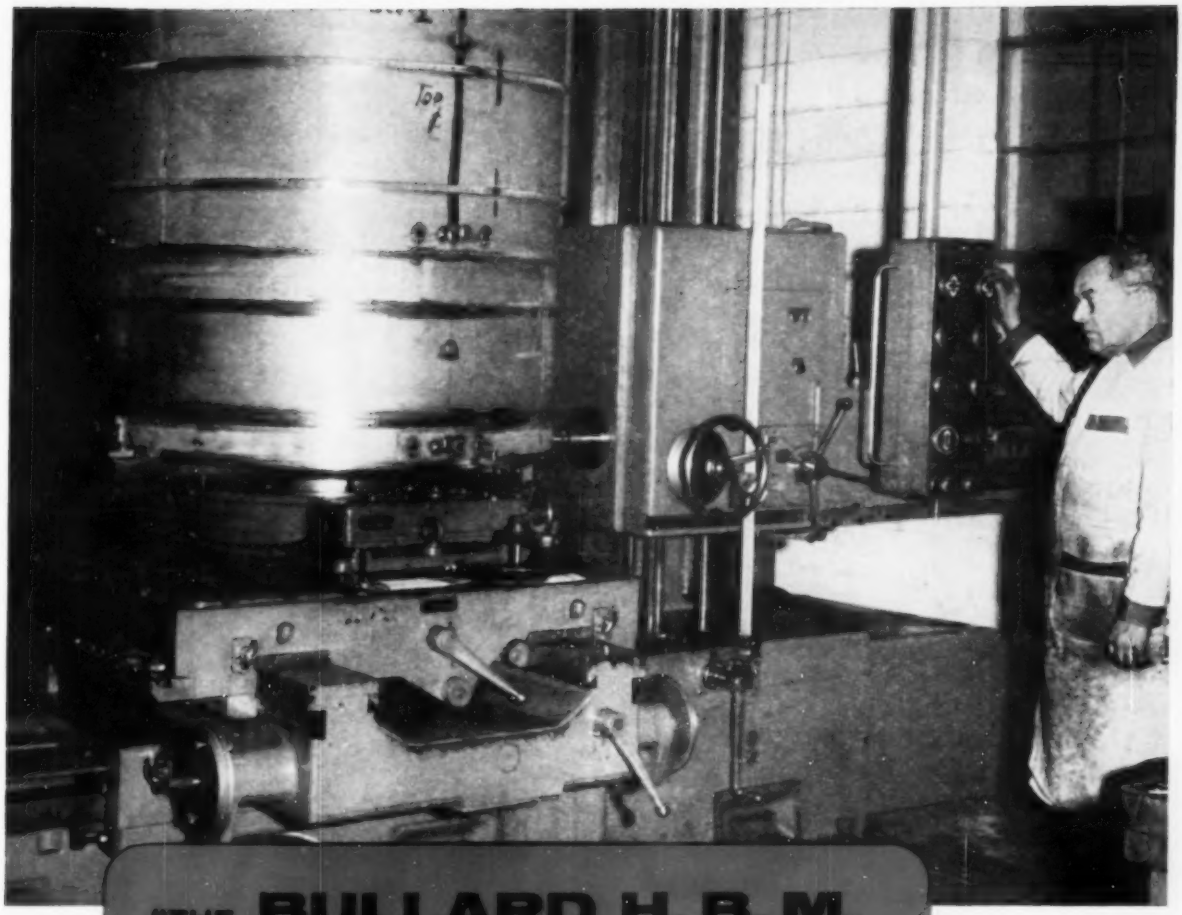
In addition to features listed in this chart, STANDARD Dial Indicators have lapped pinion teeth, burnished pivots and highly polished spindles.

Superior Construction Invariably Leads To Better Performance

Firms keeping accurate records of indicator servicing show lowest *in-use* costs for STANDARD dial indicators. Spindle and pinion teeth hardness, bronze bearings and superior finish virtually eliminate normal wear! See these features in the *Man-from-Standard's* new do-it-yourself test kit.

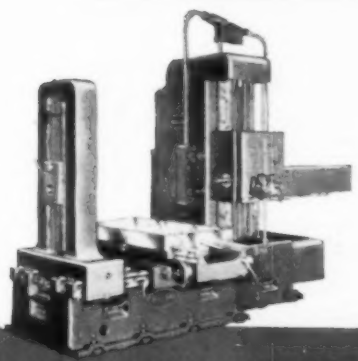
STANDARD GAGE COMPANY, INC.
SINCE 1925
POUGHKEEPSIE, N.Y.

A COMPLETE LINE OF GAGES . . . INDICATING, FIXED AND ADJUSTABLE TYPES



"THE BULLARD H. B. M. MODEL 75 is the best on the market"...

"And yet it costs no more than others. Our accuracy is much improved . . . and production has increased 20%—and business is up by at least 20% . . . these factors mean higher profits. The Bullard H. B. M., Model 75 will pay for itself many times over."



Bullard 3" Horizontal Boring, Milling & Drilling Machine, Model 75 one of four models in the complete line.

This statement by the owner of a leading job shop in the Detroit area is typical of the benefits derived when modern Bullard Machine Tools are applied to machining methods and problems.

How about you? If you're not employing the advantages of modern Bullard Machine Tools, your nearest sales engineer will be glad to review their application to your needs.

to cut costs when cutting metal . . . buy BULLARD

THE BULLARD COMPANY
BRIDGEPORT 9, CONNECTICUT

WHAT THE CLEVELAND DIALMATIC DOES FOR VEE-ARC... IT CAN DO FOR YOU!

VEE-ARC CORPORATION
WESTBORO, MASSACHUSETTS
PRECISION MACHINE PRODUCTS

The Cleveland Automatic Machine Company
4932 Beech Street
Cincinnati 12, Ohio

Attention: Mr. John Prohaska.

Gentlemen:

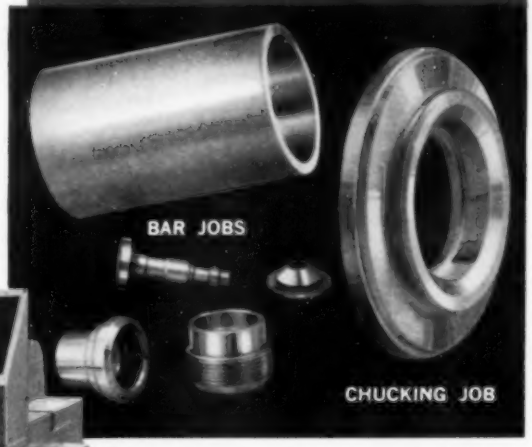
Our experience with our Cleveland 3" AB Automatic has been most gratifying. Its great versatility and accuracy as a chucker as well as a bar machine, coupled with its ease of set-up, due primarily to the use of universal cams and infinitely variable electronic feeds, and its low cost of maintenance has contributed greatly toward keeping our prices competitive and our quality high.

Because of its ease of set-up, we have used this machine to advantage on short runs of as few as 200 pieces as well as long runs of several thousand pieces.

Needless to say, we are extremely happy with our choice.

Very truly yours,
VEE-ARC CORPORATION
Aram Kalenian,
President.

Aram Kalenian, writer of the letter reproduced above, and president of Vee-Arc Corp., is shown with Ralph Rastad, superintendent, and Paul Daoust, operator, examining a chucking job run on their 3" Model AB Cleveland Dialmatic.



The parts shown (some are blanked out, others are machined complete) are typical of those produced on the Model AB 3" Cleveland Single Spindle Automatic at the Vee-Arc Corp. Diameters of these parts range from $\frac{5}{8}$" to $4\frac{1}{4}$", and materials include aluminum, type 303 stainless, and tough, cold hobbing steel

By making use of the Cleveland's chucking attachment, which is quickly substituted for the bar stock feed assembly, the part shown at right is machined from blanks of $4\frac{1}{4}$" round aluminum bar stock in 98 seconds cycle time.

What the Cleveland Dialmatic does for Vee-Arc, it can do for *you!* Choose Clevelands to increase the production efficiency in your plant.

THE CLEVELAND AUTOMATIC MACHINE COMPANY

4928 Beech Street
Cincinnati 12, Ohio

SALES OFFICES: CHICAGO
CLEVELAND • DETROIT
HARTFORD • S. ORANGE

Manufacturers of a Complete Line of Single Spindle Automatic Screw Machines and High Pressure Hydraulic Die Casting Machines

In our 50 years of manufacturing dispersions of colloidal graphite, we've seen the unique anti-friction properties of this basic material make lubricating problems disappear as if by "black magic". As an additive to lubricating oils and greases, as a parting agent in many kinds of casting and as a dry-film lubricant in diverse fields of metal working . . . in application after application . . . it has proved literally more valuable than gold.

Dr. Edward Goodrich Acheson's invention of colloidal graphite over 50 years ago has been followed by a constantly expanding program of fundamental research and product development. Today, with over 50 different dispersions already in use, three laboratory groups at Acheson are pressing toward perfection of whole new families of dispersions and their applications.

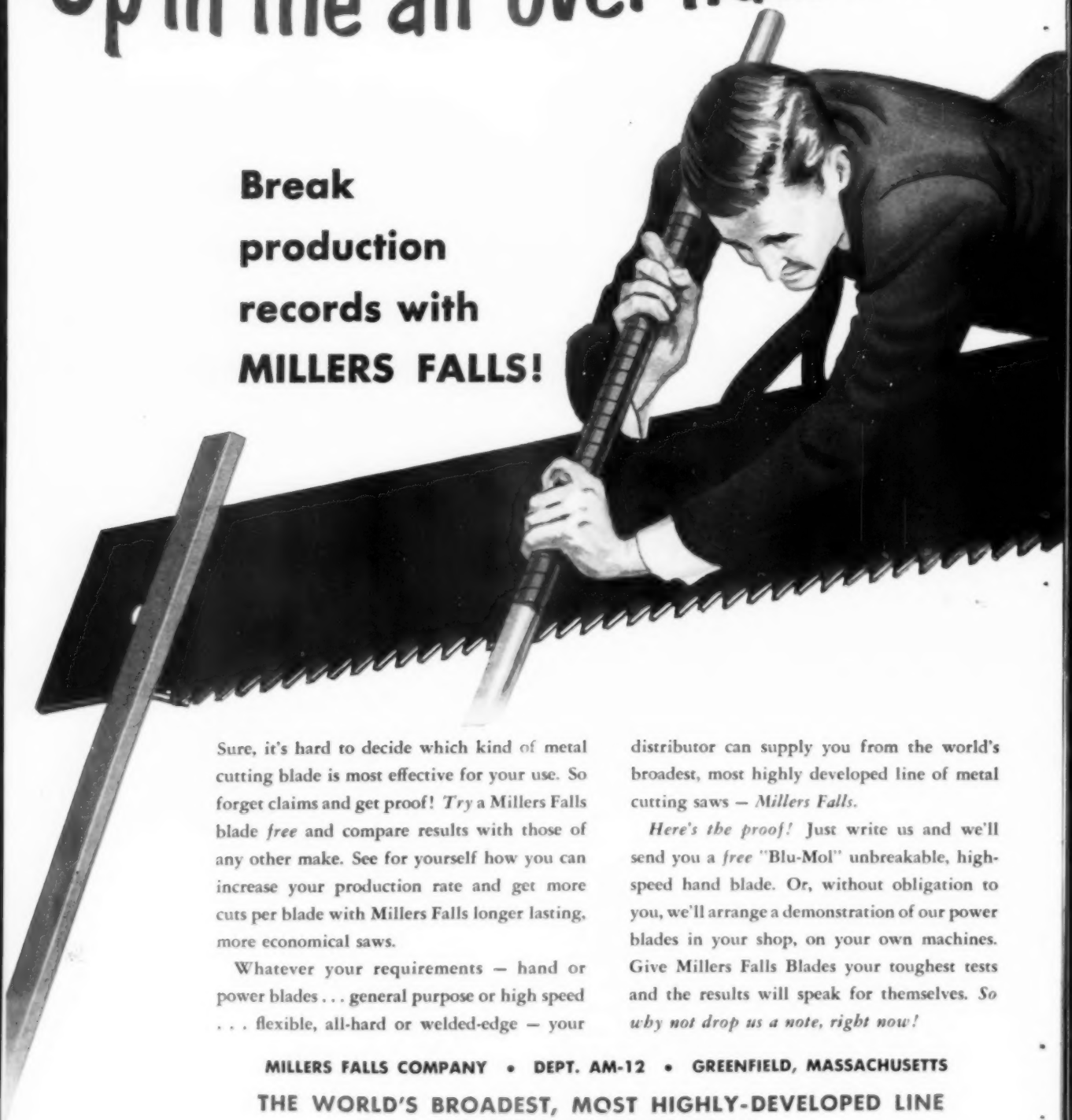
The custom dispersing of solids requires specialized facilities and production techniques. Why not take advantage of Acheson's 50 years of leadership in this field?

You will be interested in the number of different dispersed solids, in addition to graphite, that are being used successfully today in industry. Our Products List gives you, in quick-reading chart form, a résumé of Acheson 'dag'® brand dispersions and their typical applications. Send for your copy. Address Department AM-18.

ACHESON *Colloids Company*
PORT HURON, MICHIGAN
A division of Acheson Industries, Inc.
Also Acheson Industries (Europe) Ltd. and affiliates, London, England

Offices in:
Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles • Milwaukee
New York • Philadelphia • Pittsburgh • Rochester • St. Louis • Toronto

Up in the air over hacksaw



Break production records with MILLERS FALLS!

Sure, it's hard to decide which kind of metal cutting blade is most effective for your use. So forget claims and get proof! *Try* a Millers Falls blade *free* and compare results with those of any other make. See for yourself how you can increase your production rate and get more cuts per blade with Millers Falls longer lasting, more economical saws.

Whatever your requirements — hand or power blades . . . general purpose or high speed . . . flexible, all-hard or welded-edge — your distributor can supply you from the world's broadest, most highly developed line of metal cutting saws — *Millers Falls.*

Here's the proof! Just write us and we'll send you a *free* "Blu-Mol" unbreakable, high-speed hand blade. Or, without obligation to you, we'll arrange a demonstration of our power blades in your shop, on your own machines. Give Millers Falls Blades your toughest tests and the results will speak for themselves. *So why not drop us a note, right now!*

MILLERS FALLS COMPANY • DEPT. AM-12 • GREENFIELD, MASSACHUSETTS

THE WORLD'S BROADEST, MOST HIGHLY-DEVELOPED LINE OF METAL CUTTING SAWS

You'll find the Millers Falls mark of superiority MILLERS FALLS TOOLS **on hand tools**

blades?

MILLERS FALLS TOOLS
SINCE 1868®

Finest Hand and Power Tools Made for Home and Industry

TUF-FLEX®

The finest general-purpose hand hacksaw blade made. A patented, special alloy steel blade combines both toughness and flexibility. Performs jobs which are impossible for ordinary flexible blades.

BLU-FLEX®

Unexcelled for cutting hard alloy steel. Specially heat-treated, Blu-Flex blade is *fast, flexible* and virtually *unbreakable*. Both hand and power blades will handle difficult cutting operations.

WHICH MILLERS FALLS BLADE IS BEST FOR YOU?

BLU-MOL®

Made of high-speed molybdenum alloy steel. Heat-treated to cut hacksawing costs up to 20% and even more. Extremely popular for industrial use. Both hand and power sizes are available.

BLU-MOL® DOUBLE-LIFE

Makes twice as many cuts for only one-third more cost. The original and only double-edge power blade. Heat treatment produces hard cutting edges with tough center to minimize breakage

JET-EDGE®

The jet-age power blade with a high-speed steel cutting edge, welded electronically to a tough alloy steel back. Its exclusive design makes Jet-Edge practically unbreakable and shatterproof.

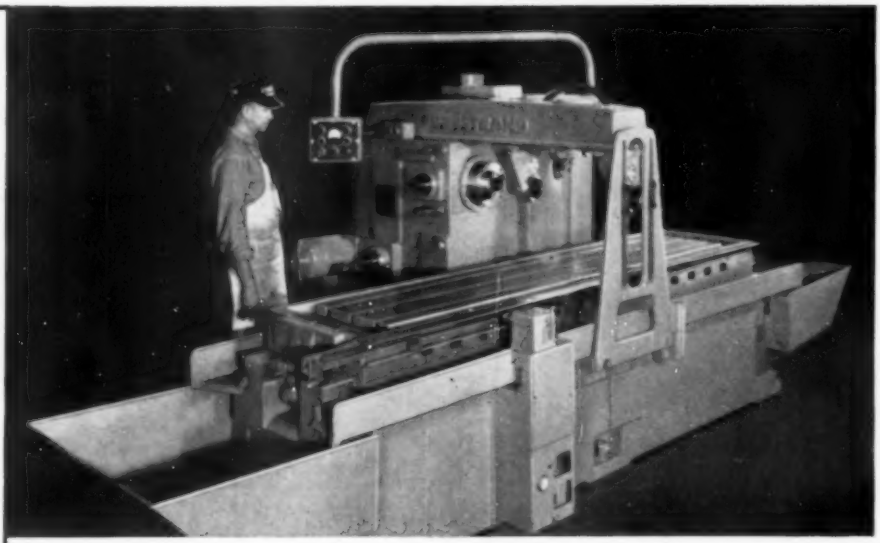
precision tools **metal cutting saws** **and portable electric tools.**

New SUNDSTRAND C-MODEL RIGIDMILS COVER A WIDE RANGE OF JOBS

CHECK THIS COMBINATION OF NEW AND PRODUCTION-PROVED FEATURES

- ☐ Unit construction of head, table, and column permits maximum interchangeability through several machine sizes.
- ☐ 100 to 1 ratio between high and low feed rate in mechanical drive for table feed screw. Standard feed ranges available are: ¾" to 75" or 1½" to 150" per minute.
- ☐ Climb or conventional milling can be performed separately or in combination.
- ☐ Screw feed to table.
- ☐ Square type table ways surfaced with wear resistant, nonscoring material.
- ☐ Automatic lubrication to all moving parts.
- ☐ Unusually heavy spindle with precision type bearings.
- ☐ Automatic table cycles for maximum efficiency.
- ☐ Chips can be removed easily from the sheet metal chip pans at each end of machine.
- ☐ Adjustable dwell mechanism for one or both ends of table.
- ☐ Ball bearing screws can be provided for numerically controlled or electronic tracer controlled machines.*
- ☐ Second table feed rate for one or both ends.*
- ☐ Vertical power movement to head.*
- ☐ Vertical feed and rapid traverse to head.*
- ☐ Chip paddles for removal of chips to chip pan.*

* *Optional at extra cost.*



Now — for the first time — the new Sundstrand "C" Model Rigidmils let you choose the milling machine with the right combination of table size, stroke, spindle speeds, horsepower, etc. for your job. Unit construction permits interchangeability of heads, tables, and columns through several sizes and provides customized installations where needed.

Every Sundstrand Rigidmil, both Simplex and Duplex, can be set up quickly and easily for a wide range of work. Pushbuttons are used to control single job setups and dogs on the front of the machine automatically control a wide range of production milling cycles.

Write for Bulletin 187 describing C-Model Rigidmils

SUNDSTRAND
Machine Tool Co.
2533 Eleventh St. • Rockford, Ill., U. S. A.

SUNDSTRAND "Engineered Production" Service*

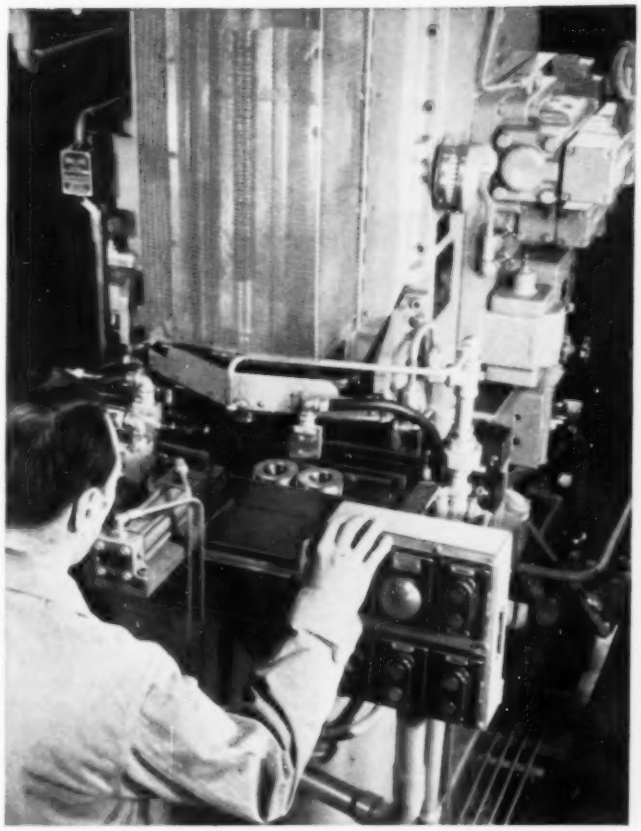
AUTOMATIC LATHES | SIMPLEX RIGIDMILS | DUPLEX RIGIDMILS | TRIPLEX RIGIDMILS | SPECIAL MACHINES

Splines and I. D. Broached in 300 Pump Gears per Hour!...

This American 3-Way Hydraulic Broaching machine with automatic loading and unloading, broaches the I. D. and 35 involute splines in 300 automotive pump gear parts per hour. Maximum accuracy is assured because the broach retreiver follows the broach down a principal portion of the broaching stroke.

After the cycle is started, parts are automatically taken from conveyor and placed into broaching position. After broaching, parts are ejected from fixture and returned to the conveyor line.

The increased production and improved accuracy are typical of American's "Engineered Production" as applied to the three elements necessary for the most practical broaching solution to any broaching problem. This method effectively adds years of design and production engineering experience, unavailable at any price, to your staff at no extra cost.



It takes All 3 for peak broaching performance

1 *Proper Broach Tool Design* — This logical first step in solving a broaching problem requires consideration of stock removal, length and width of cut, finish, tolerances, etc., so broach and machine operate as a team.

2 *Specifying the Right Machine* — Production rate required, length and speed of stroke, floor space, and relationship with other production machinery were all considered before choosing the American 3-Way for this job.

3 *Efficient Fixturing* — This vital third link in the production chain enables production schedules to be met even with inexperienced operators because skills are "built in."

SUNDSTRAND

American
BROACH & MACHINE DIVISION
SUNDSTRAND MACHINE TOOL CO.
ANN ARBOR, MICHIGAN

Write for Bulletin A122 "Practical Broaching Methods."

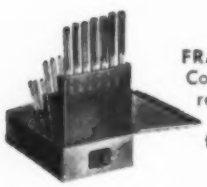
LI
has a
REAMER SET
for every purpose, plant or pocketbook

HELICAL DIE MAKERS
5/32" taper per foot, and .006 per inch. High speed steel reamers with a high helix angle for machine reaming.

TAPER PIN
¼" taper per foot. Designed for machine or hand reaming standard taper pin holes.

DOWEL PIN
For machine reaming standard dowel pin holes. Sets from ⅛" thru ½".

WIRE GAGE
Wide range of 60 reamers for wire gage sizes from (.2280) #1 thru (.0400) #60.



FRACTIONAL SIZE
Complete range for reaming fractional size holes. Sets from 1/16" thru ½" by 64ths.

Other sets include: Letter size, Over & Under Size and Drill & Reamer Blanks. 34 sets in straight or spiral flutes to choose from, plus 8 combinations of drill and reamer blank sets.

L&I

"the reamer specialists"

LAVALLEE & IDE, INC.

CHICOPEE, MASS.

Letters...

To American Machinist
330 W 42nd St, NY 36, NY

Better public relations

Dear Sirs:

This is called the Machine Age. But what does that mean? And how many people understand why? Practically every other factor of modern living receives widespread publicity, and the expense entailed pays off.

We have better homes, better foods, better sanitation, automobiles, heating, refrigeration, telephones, and numberless other appliances. But why? Because modern ingenuity applied to mechanics is able to devise methods and machinery to make these things in a quality and quantity within the price people are willing to pay. However, to a great extent, the knowledge and equipment necessary, and the many ramifications for efficient economical manufacture of metal products are not commonly understood.

Television abounds with some of the most worthless programs imaginable, and their value as an educational service leaves much to be desired. On the other hand, many manufacturing firms possess very fine films which show, step by step, the processes involved in bringing their products to final form.

Such organizations as the American Manufacturers Association and the Chamber of Commerce could assemble these into a program for television which would bring new information to many people who, otherwise, would never know the variety of today's machine marvels and the research that has developed them.

Walter Ryder
New Bedford, Mass

British honeycomb

Dear Sirs:

In "Spot News" (*AM*—Oct 7 '57, p89) you mention a British engineer who invented the honeycomb process and who declares that the US honeycomb-making methods are too expensive.

Would it be possible to secure the address of this British engineer and also of the company that supplies the honeycomb made in England?

We use considerable honeycomb in our manufacturing, and we would appreciate your help in

SHOPMATES

N. Jarvis

LOOK!! WISE GUY!! EITHER I GET A LOOK AT WHAT'S IN THAT LUNCH PAIL OR YOU GET A LOOK AT WHAT'S IN THE POKEY!!
IT'S STUCK--- UUHHH--- UUMMPH--- CAN'T--- GET---IT--- OPEN--- UUMPH--- 'SFUNNY--- UUHHH!
LUNCH PAILS MUST BE OPENED FOR INSPECTION WHEN L[illegible]ING AREA
IF THEY'D SOLDER UP THE PARTS AS GOOD AS THEY SOLDERED UP HIS PAIL, WE'D HAVE NO USE FOR A REPAIR DEPARTMENT!!
EVERYBODY WANTS TO BE A COMEDIAN — A SOLDER JOB ON A LUNCH PAIL IS COMEDY— WHAT HAPPENS WHEN THE WATCHMAN GETS MAD IS PURE TRAGEDY!
N. Jarvis

Your Machine Tools Deserve the Best in Electrical Measuring Instruments USE

Simpson panel instruments...

VOLTMETERS, AMMETERS, MILLIAMMETERS, MICROAMMETERS, WATTMETERS, GALVANOMETERS, VOLUME LEVEL INDICATORS, SEALED & RUGGEDIZED METERS, METER RELAYS

800 STOCK TYPES

...plus HUNDREDS MORE, custom-built from standing tools ✻

YOUR ELECTRONIC PARTS DISTRIBUTOR HAS HUNDREDS IN STOCK

OR

CONTACT THE FACTORY DIRECT FOR QUANTITY PURCHASES

✻ Send us your special meter requirements today. Let our top-flight engineers work out solutions or make recommendations best suited to your needs.

Simpson INSTRUMENTS THAT STAY ACCURATE

5200 West Kinzie Street, Chicago 44, Ill., Phone: ESterbrook 9-1121

In Canada: Bach-Simpson, Ltd., London, Ontario

Division of American Gage and Machine Company

LEADERS IN INDUSTRY MARK WITH NOBLEWEST

Roll Marks 6,000 Pieces Per Hour

Here is another Noblewest achievement for faster, better marking at lower cost. Designed and built by Noblewest especially for high production marking of thin walled cup-shaped parts or tubes. Model 482, illustrated, is shown tooled for *Roll marking* a famous name garden hose accessory. Operator simply loads the parts onto the work feed dial. From that point the process is completely automatic.

Whatever your requirements for *permanently indented* marking, you are assured of the finest machines and marking tools when you specify Noblewest.

Write for new comprehensive catalog. Noble & Westbrook Manufacturing Co., 17 Westbrook St., East Hartford 8, Connecticut.

Noblewest precision marking dies and tools are the standard for quality and long life. Large facilities permit excellent delivery at competitive prices.

Visit the Noblewest MARK-O-RAMA at the Tool Engineers' Show

MARK IT BEST WITH NOBLEWEST IMPROVED MARKING DEVICES

NOBLEWEST

ORIGINATORS OF THE ROLL MARKING PROCESS

MARKING
NUMBERING
EMBOSSING
GRADUATING

making some comparisons in quality and cost between foreign-made and US materials.

R L Johnson, *President*
St Croix Corp, Park Falls, Wis

The item on British methods of making honeycomb was extracted from an article in our British publication, Metalworking Production *(MP—Aug 30 '57, p1053), and was entitled "British approach to honeycomb production."*

The inventor of the process is George May, Dufaylite Developments Ltd, Boreham Wood, Herts, England. "Dufaylite" is the trade name for the honeycomb process in England—Ed.

Soviet machine tools

Dear Sirs:
I would greatly appreciate your informing me if *American Machinist* has published in the last few years any estimates of the total number of machine tools in use in the Soviet Union. (Not the annual output, but the number in action at any one date or year—if possible, a figure comparable to your accurate, every-five-year inventory of machine tools in the US.)

John A Waring, Jr
New York, NY

In 1955 we published an article, "How Many Machine Tools in the Soviet Union" (AM—*April 11 '55, p118), showing numbers and types of Soviet machine tools.*

Additional information can be

Helpful Henry

By L. Hoppes

"He's probably playing a game Mrs. Smith. Bet we can find him!"

found in our recent series of eight first-hand articles about Russian industry, published in the issues of Nov 19 '56, Dec 3 '56, Dec 17 '56, Jan 14 '57, Feb 11 '57, Feb 25 '57, Mar 11 '57, and May 6 '57.

Moreover, their technological advances are reported in American Machinist *as soon as possible after they appear in the Russian technical journals*—Ed.

CALENDAR

NATIONAL TOOL & DIE MANUFACTURERS ASSOCIATION — Winter Meeting, Feb 5-8, Ambassador Hotel, Los Angeles, Calif.

AMERICAN MACHINE TOOL DISTRIBUTORS ASSOCIATION—Spring Meeting, Mar 10-11, Hotel Roosevelt, New Orleans, La.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS AND AMERICAN ROCKET SOCIETY — Joint Aviation Conference, Mar 17-20, Hotel Statler-Hilton, Dallas, Texas.

AMERICAN SOCIETY FOR METALS (Golden Gate Chapter)—Annual Western Welding, Brazing, and Heat-Treating Conference, Mar 27-28, Stanford Research Institute, Menlo Park, Calif.

SOCIETY OF AUTOMOTIVE ENGINEERS — Production Meeting and Forum, Mar 31-Apr 2, The Drake, Chicago, Ill.

SOCIETY OF AUTOMOTIVE ENGINEERS —Aeronautic Meeting and Display, Apr 8-11, Hotel Commodore, New York, NY

AMERICAN WELDING SOCIETY—Spring Meeting and Welding Show, Apr 14-18, Kiel Auditorium and Statler Hotel, St Louis, Mo.

AMERICAN SOCIETY OF TOOL ENGINEERS—Tool Show and Annual Meeting, May 1-8 (closed Sunday). Convention Center, Philadelphia, Penna.

NATIONAL TOOL & DIE MANUFACTURERS ASSOCIATION—Spring Meeting, May 3-6, Statler Hotel, Washington, DC.

AMERICAN SOCIETY FOR METALS — Southwestern Metal Exposition and Congress, May 12-16, State Fair Park, Dallas, Texas.

NATIONAL MATERIALS HANDLING EXPOSITION and concurrent ASME Conference on Materials Handling, June 9-12, Public Auditorium, Cleveland, Ohio.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS—Semi-Annual Meeting, June 15-19, Hotel Statler, Detroit, Mich.

NEW!

Two Cylindrical Die Type

THREAD ROLLING MACHINE

HORIZONTAL TYPE

Especially Suited for Job Shops

for Both In-feed and Thru-feed Rolling

The use of highly skilled setup and operating personnel is not required, because of the simplicity of operation and of changeover from one job to another. A cam-actuated head feeds the dies into the work and a fine micrometer adjustment provides for accurate final sizing. Can be used for manual, semi-automatic or completely automatic feeding.

Supplements widely used Reed cylindrical die thread rolling machines of the three die type.

DIAMETER CAPACITIES

In-feed - up to 2 inches

Thru-feed - up to 3/4 inch

REED

Write for Machine Bulletin B 111-1

REED ROLLED THREAD DIE CO.

Specialists in Thread and Form Rolling Tools and Equipment

WORCESTER 1, MASSACHUSETTS, U.S.A.

Sales Offices In: Buffalo, Chicago, Cleveland, Compton, Calif., Denver, Detroit, Englewood, N. J., Houston, Indianapolis, Milwaukee, Montreal, New York City, Phila., Pittsburgh, St. Louis, Syracuse, Toronto

TRM-188

His new grinding technique

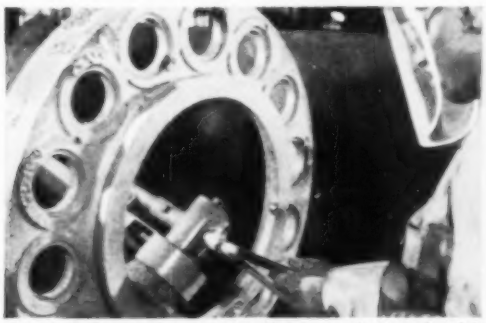
Twenty-eight years ago Jack O'Sullivan was running a swing-frame grinder for Crucible Steel... now he's President of Engineered Sales Co., one of New Jersey's largest abrasive distributors. He knows grinding from the operator's point of view and from the cost accountant's.

New baby swing-frame takes weight load of portable grinder off operator . . . enables him to grind smooth, flat surface without accidental scars and nicks due to fatigue.

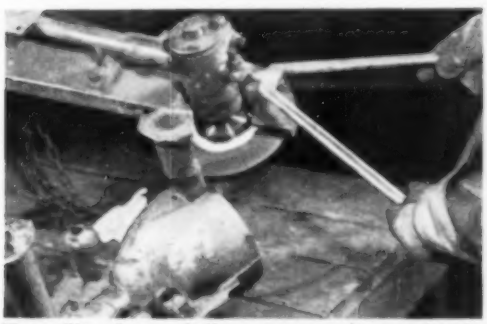
Big foundries have big grinding problems. For example, Cooper Alloy Corporation, pioneer in the production casting of stainless steel valves and fittings, had this one: they found that some grinding jobs just couldn't be done with big swing-frame grinders. Yet they were backbreakers when done with portables . . . expensive, too.

cuts costs and back-aches

They *were*, that is, until Bay State distributor Jack O'Sullivan came up with an idea. Working with Bay State and Fox Grinders, Inc., he devised a baby swing-frame that used the conventional cup and raised hub disc wheels normally used only on portables. This enabled Cooper's operators to grind hard-to-reach surfaces and notch or cut off sprues, gates and risers . . . without fatigue . . . and with a great deal more speed and accuracy.



Tricky I. D. grind demands a light, precise touch with a coarse-grained cup wheel (tapered or straight). Operator is free to concentrate on accuracy.



Versatility of new grinding set-up permits operators to use Bay State raised hub disc wheels ("hat" wheels) for notching and cutting off sprues, gates, risers.

Like Jack O'Sullivan, *all* Bay State representatives are more than just grinding wheel salesmen. That's why they often come up with ideas that result in basic operating improvements. Why not call in *your* Bay State man? **Better grinding at lower cost – that is his business.**

BAY STATE WHEELS of PROGRESS

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts. *Distributors:* All principal cities.
In Canada: Bay State Abrasive Products Co., Ltd., Brantford, Ontario.
Branch Offices and Warehouses: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh.

facts about LEDLOY* FREE-MACHINING STEELS

The Inland process of adding lead to any steel improves machinability from 25 to 50% without affecting mechanical and metallurgical properties

Ledloy is Inland Steel Company's trade name for any grade of steel to which lead has been added to obtain greater machinability. Inland regularly produces Ledloy free-machining open hearth steels to a wide variety of chemical specifications to meet customer requirements. In each instance, regardless of the chemical composition, *the addition of lead by the Inland process results in no significant change in the desirable mechanical and metallurgical characteristics of the steel.* All the important qualities of open hearth steels, such as ductility, impact values, transverse strength, case hardening qualities and cross sectional soundness are retained. Any heat treating, or forging operation that can be performed on similar non-leaded grades of open hearth steels *can be performed* on Inland Ledloy free-machining steels.

What is affected, and to a marked degree, is machinability! Though Inland Ledloy steels contain only about one-quarter of one percent lead, distributed evenly throughout the steel, this small quantity of lead does amazing things to the steel's machinability. On-the-job use consistently shows cold drawn Ledloy can be machined 45% faster than B1113 and 100% faster than B1112. Surface speeds of 325 feet per minute are common and much higher speeds are possible; up to 450 sfm with high speed tools and up to 600 sfm with carbide tooling.

Not only is speed increased, but down-time for tool changes is markedly reduced. The reason is that Inland's process of adding lead to steel lowers the steel's friction component and actually lubricates the cutting tool during machining. Less heat is generated, tool-edge build-up is minimized and tool life is increased considerably.

Ledloy steels' shorter-length chips generally fall clear of the tool and Ledloy's lubricant characteristic aids in preventing chips from welding to the tool.

Ledloy steels are especially clean-cutting and machine to a fine, smooth finish — smoother than that obtained with other free-cutting steels—making dimensional tolerances easier to maintain. In practically all cases, Ledloy steels may be fabricated—sheared, bent, formed, torch-cut, welded, brazed—in the same manner used for steels of the same base chemical composition and with equal or better results.

Many grades available—Inland Ledloy free-machining steels are available in a wide range of standard carbon and alloy grades in bar form. Ledloy free-machining plates are also produced.

If your product requires machining, it will pay you to get all the details on Inland Ledloy . . . the original leaded steel. Ask your cold-drawer about it today, or write Inland Steel Company, 30 West Monroe Street, Chicago 3, Illinois, for the interesting booklet, "Properties of Inland Ledloy Steels."

INLAND STEEL

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport St. Louis • Kansas City • Indianapolis • Detroit • New York

INLAND

Ledloy Steels

the world's most machinable

*Reg. Trade Mark

TAPPING TORQUE

No, you cannot buy torque tested taps from stock today, and perhaps you never will.

But, you can get the benefit of taps whose prototypes have been torque tested for hours on end. These prototypes are the taps which tell Greenfield engineers what features of a tap have the greatest effect on cutting ability, power consumption, wearlife, and overall strength.

Greenfield's electronic torque testers also help determine the "threadability" of new materials and new alloys of old materials.

"Educated guesses" are all right in their place, but for today's requirements we'll take an electronic tape recording.

TODAY'S RESEARCH IS
TOMORROW'S PAYOFF

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TAP AND DIE CORPORATION, GREENFIELD, MASS.

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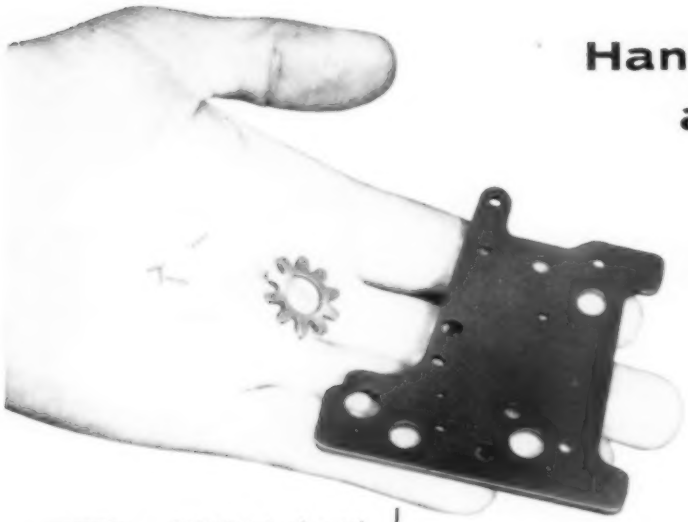


Hand Your Deburring and Finishing Problems to ALMCO...

These companies did... and cut costs, improved quality, increased production.

DEBURRING of spark plug bushings by hand formerly caused many rejects at Canadian Pratt and Whitney. Costs were $104.20 per M with rejects totalling 12½%. Two Almco barrel finishing machines cut costs 97%, practically eliminated rejects.

SMALL GREASE GUN COUPLER JAWS (⅞" x ¾") couldn't be deburred manually at a midwest screw products firm. With an Almco barrel finishing machine, 40,000 coupler jaws can now be deburred in 10 hours. Jaws are smooth, uniform, ready for plating.

DEBURRING AND POLISHING by manual methods proved expensive for delicate instrument and fountain pen parts at J. Bishop & Co. Almco barrel finishing machine increased output from 200 to 6000 parts per hour, cut costs 98.8%. Annual savings: $6,917.50.

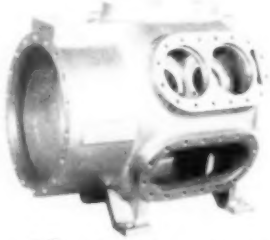
INCREASED PRODUCTION quotas demanded faster finishing at Alco Valve Co. Hand deburring and polishing finished only 200 stainless steel parts per hour. Almco machines are now barrel finishing over 1400 per hour, and to stricter finishing specs. Plant production needs are easily filled.

FILING burrs by hand formerly cost $55 per 100 needle plate forgings at Landis Machine Co. Now an Almco barrel finishing machine has cut finishing costs to 55 cents per 100 parts. Parts are uniform, rejects are eliminated. Savings come to 99%!

HEAVY WORK LOADS of roller bearings presented serious finishing problems at Timken's Columbus, Ohio plant. Now special heavy-duty Almco barrel finishing machines are processing two tons of rollers per load. And 50% of floor space has been saved; finishing costs have been slashed.

Large Parts too are Almco Barrel Finished!

AT AN IOWA FOUNDRY, an Almco barrel finishing machine deburrs, polishes 48 large wash machine agitators per hour. Fixtures hold castings firmly within Almco barrel. Rough edges are completely removed; castings are highly polished; appearance is improved.



AT AIR CONDITIONING FIRM, compressor housings weighing over 100 lbs. are Almco barrel finished. Almco process breaks sharp edges of castings, cleans internal surfaces, and improves surface finishes. Two housings are cleaned in 20 minute cycle! Workmen are relieved for other plant tasks!

Send Your Parts to Almco's Modern Test Laboratory.

Sample parts processed without obligation. Simply write on letterhead, sending parts direct to Albert Lea, enclosing specifications required. Complete, free report includes recommendation. 52 PAGE HANDBOOK ON BARREL FINISHING SENT ON REQUEST.

ALMCO

QUEEN PRODUCTS, INC.

51 Marshall Street • Albert Lea, Minnesota

Sales and Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven and Philadelphia.

Subsidiary of KING-SEELEY Corporation

IN ENGLAND: Almco Divis on of Great Britain, Ltd., Bury Mead Works, Hitchin, Herts, England.

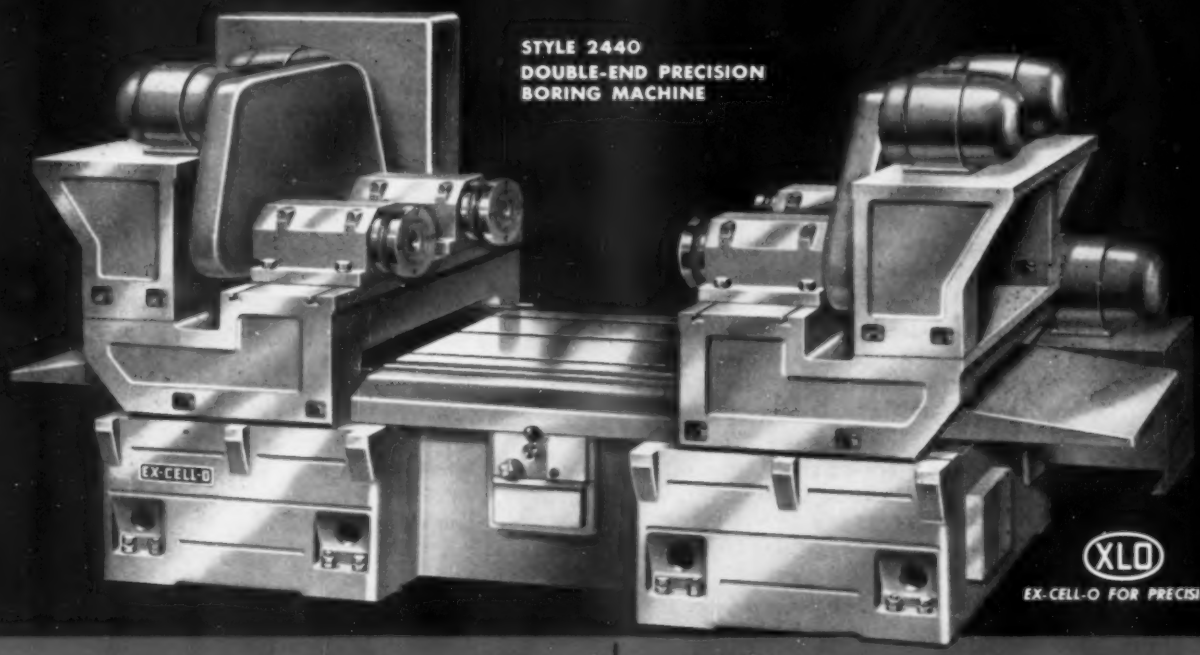
SPOT NEWS...

- **"Bracket approach" to depreciation is being suggested** to succeed Bulletin F by the U S Chamber of Commerce as a more realistic method of depreciation. In essence, it works this way: depreciable assets would be classified into no more than 15 categories, with a maximum and minimum useful life in each bracket. Taxpayer could choose any useful life within the bracket without Internal Revenue interference. Recommended average depreciable lives for machine tools: 5 to 10 years (see p282).
- **Decision by one of the "Big Three" to move transmissions to the rear** in 1959 models, instead of 1960, promises sizable machine tool orders soon and may result in similar action by competitors. (see p93).
- **British federation of 39 shipbuilding and engineering unions** is ready to negotiate directly with Russia and Communist China to increase trade and avoid possible layoffs. Union is willing to send a delegation to those countries or receive delegations from them. It also suggests revision of restricted exports to Communist nations.
- **Russia is planning sizable expansion** of its steel and nonferrous metals production facilities under the Sixth Five-Year Plan. To meet the need for high-purity steels for peacetime uses of atomic energy, Russia claims to have developed an efficient method of raising the quality of steel by treating it in liquid form under vacuum conditions.
- **Demands for a 6% general wage boost and a 13¢-an-hour cost of living,** made by the International Association of Machinists to Lockheed, first aircraft firm to come up for negotiation, are "staggering," Lockheed says. They would boost payrolls and fringe costs 35%, or $50 million a year.
- **Preset tooling for automatic multi-spindle screw machines** is getting a lot of attention from GE, GM, Ford, and cutting tool makers.
- **High-level guided missile conference for the West Coast** is in the planning stage at the Los Angeles Chamber of Commerce, with March 20 set as the tentative date. Top government names are expected to attend.
- **National Bureau of Standards is plugging an "international inch"** because of increased interrelationship between U S and NATO countries in development and production of missiles and other war materiel. Idea is to achieve precise gage blocks that apply to all countries. Also being urged by NBS is modifying the pound—change would only amount to a few parts in a million.
- **Retention of a larger share of earnings by manufacturers** through lower income taxes—thus expanding the only important source of new capital—was advocated by Philip Marsilius, executive VP of Producto Machine Co and president National Tool & Die Manufacturers Association, at a House Ways & Means Committee hearing on federal tax revision January 10. He recommended that surtax exemption be increased from $25,000 to first $100,000 of corporate income.
- **Horizontal rolling mill that compacts metal powders directly into sheet** and strip, and which can be converted into a vertical 2 high/4 high combination mill, has been introduced by Stanat Mfg Co, Westbury, L I. Mill produces ferrous and nonferrous materials in widths to 7 in., and thicknesses ranging from 1/32 to ⅛ in., can be used for hot or cold rolling.

Spot index to major News stories...

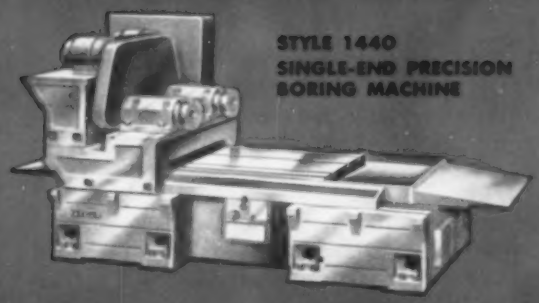
GE Builds for $1 Billion Motor Market 274
Urge More Realistic Depreciation Policy 282
U S Methods Spark European Auto Boom 277
Procurement Shifts to Missiles, R & D 278
Washington 91
Detroit 93
Aircraft & Missiles 95
Machine Tools 97
What's Ahead
in Metalworking 99
in Business 100

announcing



STYLE 2440
DOUBLE-END PRECISION
BORING MACHINE

XLO
EX-CELL-O FOR PRECISION



STYLE 1440
SINGLE-END PRECISION
BORING MACHINE

TWO NEW HEAVY DUTY PRECISION BORING MACHINES

57-76

EX-CELL-O BORING MACHINES perform better because of deep-down solid construction, high precision and exceptional versatility. The minute you put one to work profits go up, operating costs go down. And these two new additions to the Ex-Cell-O line are no exceptions:

DOUBLE-END STYLE 2440: This new double-end Ex-Cell-O machine, designed for large workpieces, combines capacity and rigidity for bulky parts while allowing for multiple-station high production work on smaller parts. Spindle bridges can be moved together or spread apart to suit the workpiece.

SINGLE-END STYLE 1440: This new heavy-duty precision boring machine is identical to the 2440 (above) except that it is equipped with one bridge for single-end operations.

Whichever model fits your particular production requirements—you'll find their rugged versatility performs a wide range of rough, semi-finish, and finish operations which lowers your per-unit costs, increases your potential profit.

For further information, call your local Ex-Cell-O Representative. He'll provide all the facts about these two new machines. Or, write direct to Ex-Cell-O.

EX-CELL-O CORPORATION *Machinery Division*
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS, • GRINDING AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

WASHINGTON...

The new budget...

. . . will be the battle ground over which the Democrats and the Republicans will be fighting from now until they leave town next summer to go home and prepare for the November elections.

The $74.4-billion spending program (see page 278)—the biggest ever submitted in peacetime—is big enough, Eisenhower says, to do two things: (1) spend all that can be profitably spent to catch up with the Russians in missiles, space, and science, and (2) do all that's now needed to end the present recession and turn the economy into a new period of growth and expansion.

Democrats differ...

. . . with Eisenhower's program for the next 18 months on both counts. Most of them claim he's not doing enough to beef up the defense program, that the country's real needs and the desires of the people are for a much more "urgent" program than the President is submitting for Congressional approval.

Similarly, they think that the President and his economic advisors are being much more hopeful of a business upturn this fall than the situation warrants.

They note, for instance, that December unemployment figures hit a new high of $3.4 million—during a month when the numbers of unemployed should have been less than the previous month.

Democrats note that the total increase in the military spending is only $900 millions—and the totals on hard goods procurement actually show a $100 million decline.

This kind of stimulation, their thinking goes, just isn't enough to do the job. Eisenhower and his strategists are counting heavily on a firming up of business confidence—which they admit took a substantial dip when the Sputniks began sailing overhead.

Also, the Eisenhower planners privately concede that their optimism is based on an outlook that includes Congressional approval of a bigger spending by government agencies than the President has requested.

The revolt of the generals...

. . . is part of military ferment over two things: some want a larger share of Eisenhower's $39.8-billion military program; some are staking out new positions to protect their interests in the agitation over reorganization of the top military command structure; some are doing both.

There's a good chance that the authority of the Chiefs of Staffs of the Army, Navy, and Air Force may be shrunk—perhaps by beefing up the authority of the Chairman of the Joint Chiefs.

The trend of Washington opinion is also running toward more consolidation of purchasing, and placing more responsibility in a single organization to procure all items of a given type.

The "Single Manager" concept—creation of a new agency to be responsible for development of space projects—is a step in this direction.

Unemployment is climbing...

. . . even higher than it shows in the latest government figures for December. Total is $3.4-million jobless, a 200,000 advance over November. But, while this sounds small, the raise put unemployment at more than 5%—the highest in three years. Also, December is usually a good employment month.

Key signs...

. . . are falling factory employment—down by 250,000 to continue a year-long trend. Also, all states showed an increase in insured unemployment. The factory workweek was the lowest for any December since World War II—at 39.3 hours—and overtime rates fell. But the sharpest picture of what's happening is in the insured unemployment figures, which run for the full month of December but aren't counted in the overall employment figures that close at mid-month. Another 500,000 were added to the states' totals in the last two weeks of December—which will show up in next month's figures.

A major concern...

. . . is part-time work. This total is climbing too and the unions are worried about this since it affects their contracts. The Steelworkers have altered their contracts with the steel industry to make sure part time workers collect supplementary unemployment benefits up to 65% of take home pay. The USW had to win the companies' approval of such payments without the usual full-week's layoff. And, the Auto Workers say they'll go after SUB payments for short-time workers in the Spring negotiations.

Capt. Ormond M. Gove, TWA Jetstream pilot, has logged over 4 million miles.

Specialists do the job better:
In the Air . . . and in the Shop, too

Since 1934, TWA Captain Ormond M. Gove has specialized in safe flight. Since 1916, Carlton has specialized, too. Our specialty: radial drill research, engineering and manufacturing. Our entire energies have been concentrated to produce the most modern radial drills on the market – nothing else. Whatever you require, be it arm lengths from 3-ft. to 12-ft. or column diameters from 9" to 26", count on Carlton. For programming, pre-select, partial pre-select and manual speed-feed controls, count on Carlton. And for added productivity, you can count on special Carlton engineered bases, tables and jigs. The Carlton Machine Tool Co., Cincinnati 25, Ohio.

Carlton

SPECIALISTS IN RADIAL DRILLS

DETROIT...

Previews of 1959...

Machine tool builders are awaiting orders for machinery to build the "Trans-axle." This is a nickname for an automatic transmission located next to the differential. Obviously, the housings of both must be completely redesigned, and this would involve new transfer machinery.

The device was previously scheduled for 1960 auto production, but Chrysler is believed to have decided to move it ahead a year and some General Motors makes may follow suit. To be ready for 1959 production, tooling orders must be placed by mid-February.

Buick and Oldsmobile both have new V-8 engine designs ready but are holding out for a 1960 introduction. Tool and die shops, however, are working overtime to insure that jigs and fixtures for the unexpectedly drastic restyling of 1959 models are ready on time.

Much of the reason for this activity is the fact that GM is going to a single body shell for all five of its makes. The forward part (including cowl, windshield opening, and "A" and "B" posts) will be interchangeable. Product differentiation will be obtained by flexible dimensions for rear doors and roofs and, of course, distinctively different sheet metal on the outside.

This is a massive change for even a corporation the size of General Motors, but it was dictated by a careful study of the economics involved. Except for the Imperial, Chrysler has used this formula successfully since 1955.

Employment drop continues...

The Michigan Employment Security Commission reports 35,300 auto workers idle as of the second week in January and sees no direction but up for this figure. It describes its compensation claim load as the biggest in recent years.

For example, Dodge opened after a two-week Christmas "holiday," promptly furloughed 3400 workers, and then shut down again for another week. Union circles claim that General Motors has laid off piecemeal over 8000 workers in assembly and parts plants across the nation.

The effect on suppliers is typified by Electric Auto-Lite where a spokesman said: "We haven't laid anyone off recently; we just never brought back those we let go during model changeover. Our employment is down 3000 from the 1957 peak."

Only real bright spot is Chrysler's $52-million Jupiter and Redstone missile contracts, with a hint of more to come. The present 4700 man work force at this plant will be doubled, but many recruits may have to be imported from aircraft centers, because of the skills needed. A missile personnel man said: "What we need are engineers who didn't go to college."

A family affair...

Edsel's continued sales difficulties resulted in an obvious move to reduce overhead. It has been absorbed as an entity by Ford Motor Co's newly formed M-E-L Division under VP James J Nance. This group will also absorb the present Lincoln-Mercury Division and take over domestic marketing of the English Ford. There is a strong possibility that the German Taunus may be added this spring.

Meanwhile, rumors abound in tooling circles that next year's Edsel will come in two models based on the Ford body shell. This means dropping the bigger, Mercury-based shell as well as the bigger powerplant.

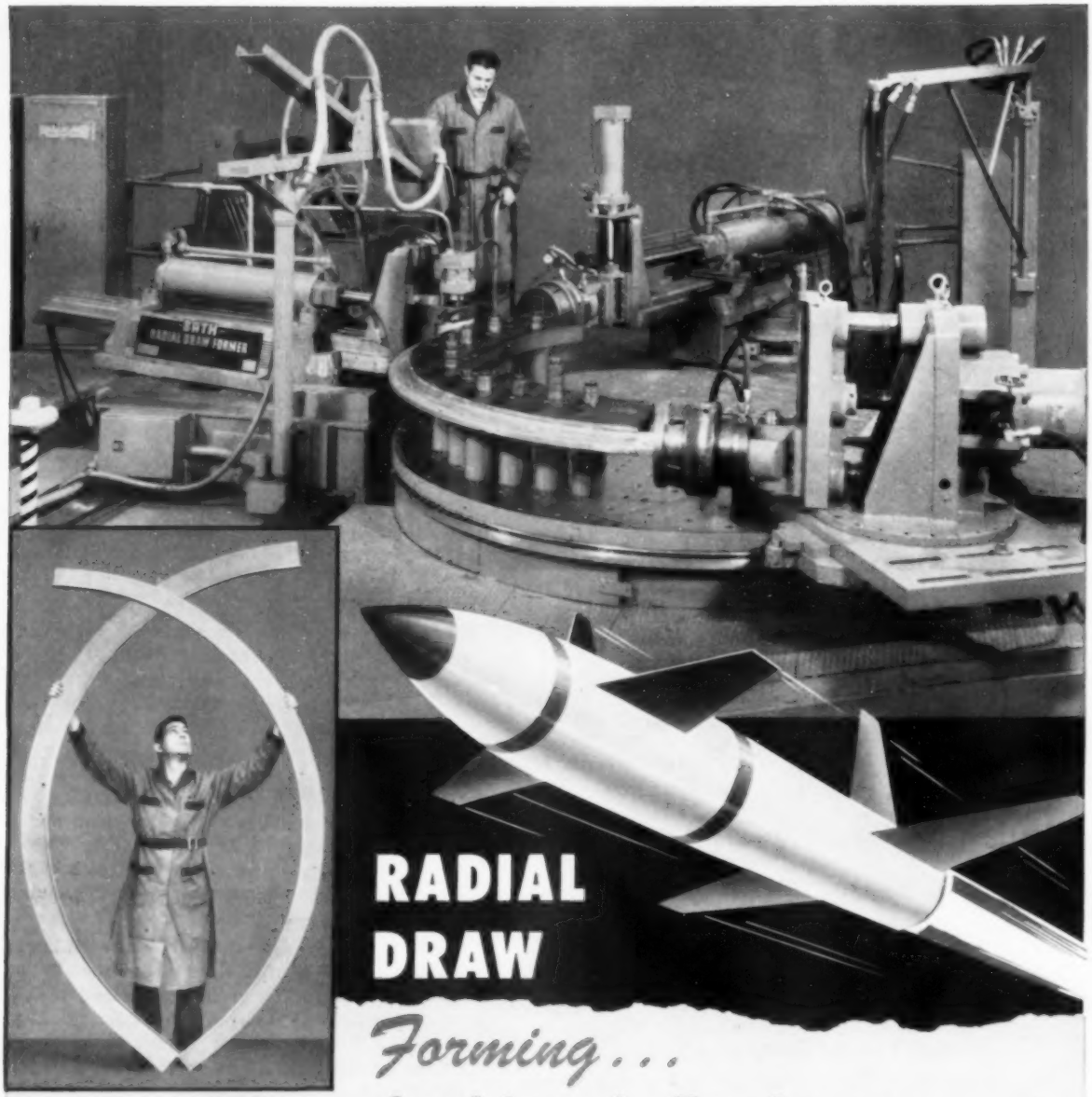
Walter Reuther's wringer...

. . . someone is going to pass through it, and a few observers say that it just might be Walter himself. The proposal to split profits has brought a wail from both industry and an ever growing number of local-level union people.

Not since Henry Ford rebated $50 to each buyer of a 1914 Model T after sales passed the 300,000 mark has anyone seriously considered letting customers share in the profits. Actually, this 25% of all auto profits over 10% on investment, suggested by Reuther, is not a demand. Neither is the 50% of the pie to bonus-level executives and stockholders. But the 25% to other salaried and hourly workers is.

Auto presidents unanimously condemned the proposal in its entirety on the grounds that Reuther is once again trying to infringe on their prerogatives.

They noticeably refrained from commenting, however, on the other, more realistic demands slated for delegates' approval at the 17th annual UAW Constitutional Convention in Detroit, January 22-24. These include an immediate wage hike (estimated unofficially at 10¢ an hour), putting Supplementary Unemployment Benefits on a daily basis and raising its present $25 maximum, more wage differentiation for skilled workers, bigger pensions, fully paid job transfers, and an improved health and medical program.



RADIAL DRAW

Forming . . .

the big missile shapes

In missile plants across the country and in the BATH Contract Forming Division, RADIAL DRAW FORMERS are producing curved shapes for practically all the major missile programs.

The BATH rotary table design and simultaneous *stretch-form* and *wipe-form* techniques yield large, one-piece parts that are both light and accurate. The new BATH yield-tension control offers extreme accuracy even in today's tough metals. Maximum strength is assured and certified in every part formed.

In missile, jet engine and aircraft production . . . where accuracy, stability and producibility really count . . . more and more parts are being formed by the *RADIAL* Draw method. Write for the new catalog number C.F.856 describing BATH Radial Draw Formers or catalog number 32310 describing the facilities of the Contract Forming Division.

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AIRCRAFT and MISSILES...

Situation Report USA...

Aircraft industry employment has firmed up, reports from all over the country indicate. That is not to say that laid-off workers are being taken back in quantity—merely that the most drastic cuts are behind us and employment can be expected to stay at present levels through '58.

In the Dallas-Fort Worth area, for instance, no big employment fluctuations are expected either way. At Convair Fort Worth, employment is pegged at about 21,000 and should stay there. A $12.5-million contract, awarded in November, has bolstered B-58 production.

Chance Vought's employment is stable at around 17,000, shored up considerably by $300 million in new contracts from the Navy—$200 million for F8U-1 and F8U-2 Crusader fighters, and $100 million for development and construction of the F8U-3, rumored to be rocket-powered. New is a $33.5-million contract for Regulus II production and spare parts.

Bell Helicopter employment is holding steady at 2500. The firm is in production of three military 'copters and two commercial ones, has a several-million-dollar contract to produce reconnaissance helicopters for the Army.

Temco Aircraft, Dallas, reports excellent prospects for its subcontracting business, says employment has stabilized at 8000.

Colorado centers are active...

Employment has passed the 5000 mark and is "slightly ahead of schedule" at The Martin Co's Titan ICBM facility at Denver.

Minor cutbacks in employment are reported, however, by two other Denver firms. Stanley Aviation Corp has cut its workforce from 580 to 400 in the last four months and is "still laying off a few, but we think we've hit bottom."

Sundstrand Machine Tool Co's Sundstrand-Denver Division is laying off 100 of its 1200 employees this month. Peak 1957 employment of 1300 was allowed to drop 100 by not replacing "the usual attrition." Current layoffs, all that are expected for some time, stem from a stretch-out in an Air Force contract for constant-speed drives.

Boeing loses out...

For a long time, Boeing Seattle had been counting on a contract from the Air Force to make the WS-110-A (the chemically fueled successor to the Boeing B-52), had cleared the decks at Seattle by switching advanced B-52 output to Wichita.

Then came word that North American Aviation, Los Angeles, had won the choice plum.

Boeing's initial disappointment was as bitter as it was short-lived. Boeing engineers rationalized loss of contract by saying that (1) manned bombers, no matter how advanced, are on the way out, and (2) that the contract calls at present only for two prototypes—both of them virtually hand made—and that doesn't mean production, possibly never will.

Although Boeing will cut its workforce by 10,000 people this year, it will still have 50,000 on its payrolls. Backlogs stand at well over $2 billion, including $750 million for civil planes.

Lockheed Marietta employment off

Lockheed's Marietta, Ga, Division expects employment to level off in 1958 at around 13,000—that's down from more than 18,000 in August.

In the works are a commercial air freighter version of the propjet C-130 Hercules, and possible manufacture of the 10-passenger jet utility plane, the Jet Star.

Long Island picture brightens . . .

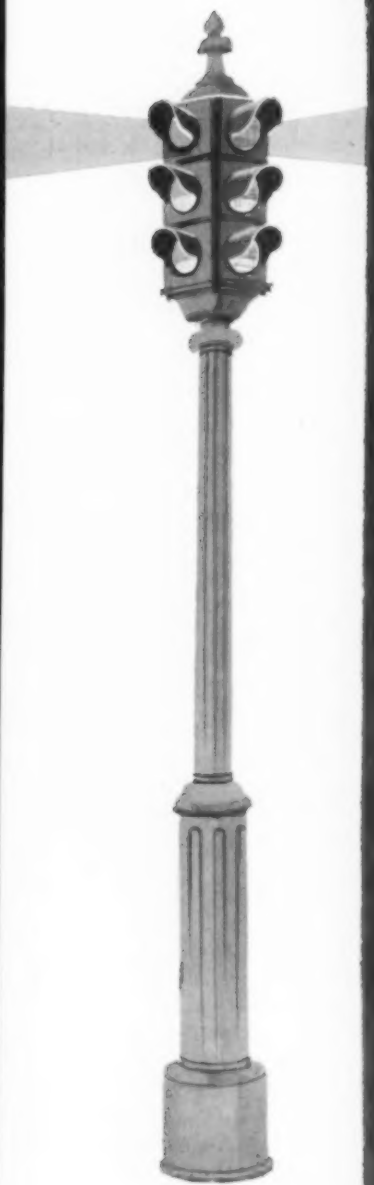
Employment has increased, not decreased, at Fairchild Engine & Aircraft's three Long Island Divisions (Engine, Stratos and Guided Missiles) since the beginning of 1957. Then, the workforce stood at 3613, today it's at 3932.

Grumman has suffered little from cutbacks (only 500 laid off out of a 13,500 workforce), expects little change during the rest of the year. Under Grumman's belt today are a $42-million follow-up contract for F9FAT's that will carry through 1959, and a $40-million new contract for WF2 Early Warning tracer planes.

Grumman's new 12-place executive "159 Gulfstream" will come off the production lines in July, and two crop-dusters are in the works.

Republic Aviation at Farmingdale, one of the hardest-hit aircraft manufacturers under defense cutbacks (some 6000 workers let go) is on the comeback trail, has taken back 500 workers already as production on the year-old F-105 "Thunderchief" increases. Republic's Guided Missile Division is at work on a $5-million Army contract to produce drones.

First French Alouette jet helicopters arrived just before Christmas (two of them), were assembled and flight-tested by Republic, and received CAA's first jet 'copter certification.



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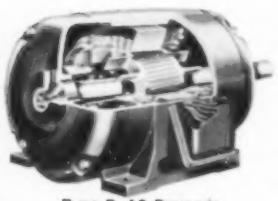
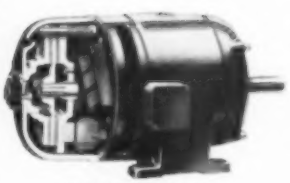


Type D, AC Dynamic

ROLLING STOP... Master Type D Dynamic Unibrake Motors. Braking is obtained with a unique, patented brake winding superimposed on the stator winding. Simple, compact, with no DC current required, the brake has no moving parts. There is nothing to wear or adjust... braking torque repeats consistently. Particularly recommended for automatic applications where static holding is not desired. Sizes ¼ to 30 H.P.

MASTER UNIBRAKE MOTORS



Type M—Magnetic

STOP-HOLD... Master Type M Magnetic Unibrake Motors. For quick, controlled stopping... especially when you want to hold the load. Spring-setting magnetic brakes of the friction disc type combine with motor in a compact, integral unit. Sizes... ⅛ to 150 H.P.

MASTER GEARMOTORS and variable speed drives can be furnished with Unibrakes, too. See Master for the perfect power drive for you.

THE MASTER ELECTRIC CO.

DAYTON 1, OHIO

DIVISION OF RELIANCE ELECTRIC AND ENGINEERING CO.

MACHINE TOOLS...

Detroit to spark orders . . .

Detroit is likely to give a lift to machine tool orders soon. Chrysler is reported about ready to advance by one year, to 1959 models, its new transmission that will be put in the rear. The "go-ahead" on it would mean large orders for at least a handful of machine tool builders. For story, see p93.

Chrysler action might well be a competitive spurt to other automobile companies to do the same thing. If it is, still more machine tool business will be generated at Detroit.

Net new orders for metal-cutting machine tools hit the bottom with a thud in December when bookings totaled under $19 million.

That compares with $28 million in November, $44 million last August and $63 million in January 1957.

The total net new orders for the year 1957 ran to $520 million, as against $927 million in 1956 and $923 million in 1955.

Shipments of metal-cutting machines last year were around $845 million. In 1956 they amounted to $886 million, in 1955 $670 million.

Though machine tool sales were at the bottom of the trough in December, it is a good bet that they will not stay that low very long.

They are not expected to rise spectacularly in the next few months, but there is good reason to believe that they will rebound to a considerably higher level than the December figure.

Many buyers are doing a lot of figuring on replacements. Inquiries are reported good by numerous builders.

Air Force plans purchases . . .

The Air Force claims that it plans to buy, either directly or through end-item contractors, some $66 million of machine tools in fiscal 1958 ending next June 30.

Before you make too much out of this, however, remember that this figure represents the Air Force's accumulated "no-year" (can spend anytime in the future) funds earmarked for machine tools. The funds do not have to be spent by mid-year.

The $60 million is part of a $330-million total for "production equipment and facilities."

Around $15 million or more of the $60 million is for replacement and modernization. The remainder is to set up new production lines.

Placement of contracts based on this program has been held up under the pre-Sputnik budget ceiling. But with defense spending loosening, things may happen.

Plans still are vague for fiscal 1959 (beginning next July 1) so far as Air Force's machine tool replacement and modernization purchases are concerned. An Air Force official, however, says, "there will be money for it."

Best guess is that about $330 million, the same as during the current year, will be allocated for production equipment and facilities.

Keep in mind that the designation "production equipment and facilities" can cover most any research and/or test project. It also covers facilities for making the high-energy, non-petroleum exotic fuels.

Surplus disposals to be limited . . .

There is nothing to wild rumors that the armed services will put up for public sale some 50,000 surplus machine tools this year.

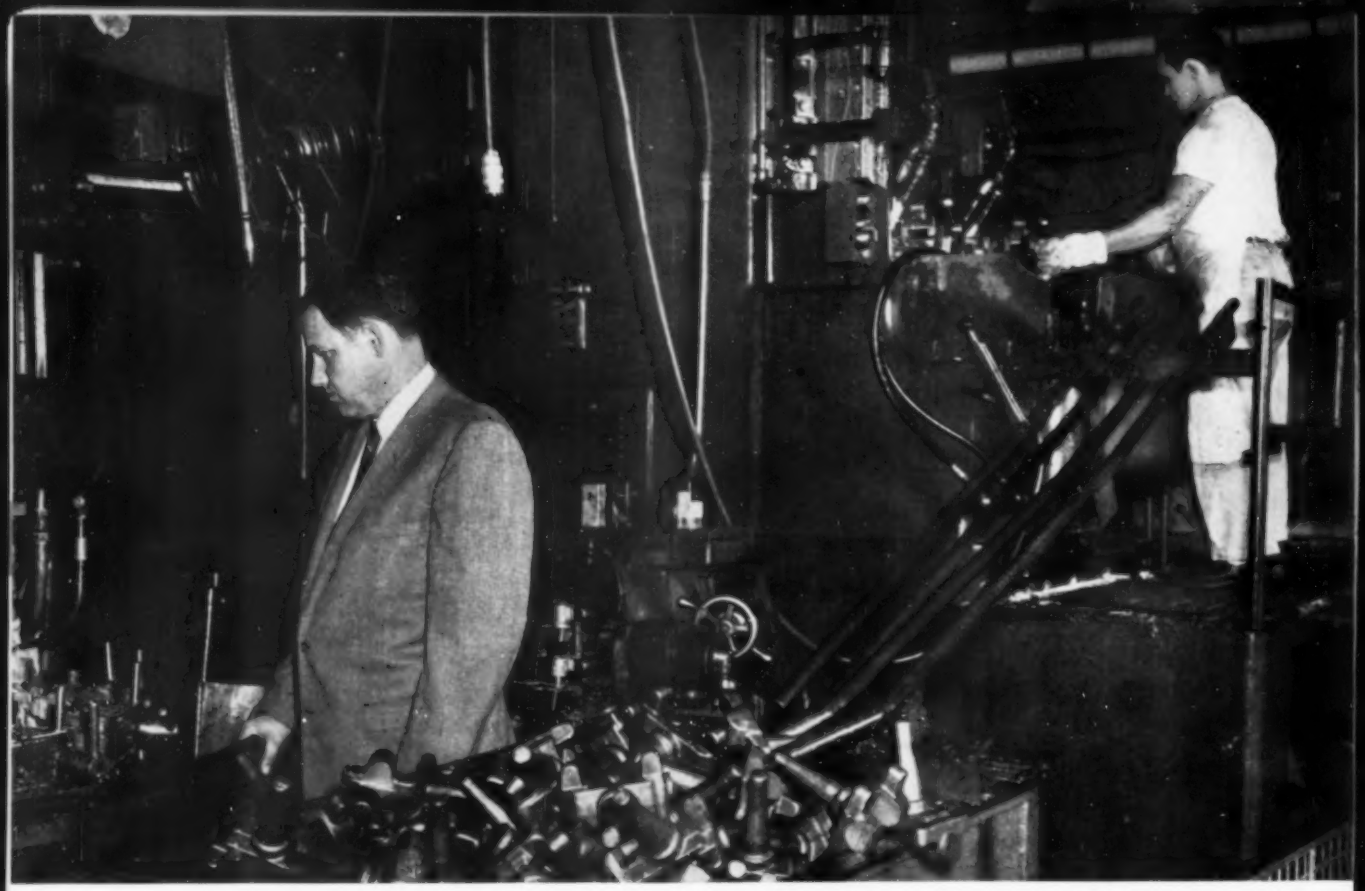
Most recent inspection was of about 700 surplus machines at Terre Haute, Ind. The next inspection will be of 1047 machines at Chevrolet's Tonawanda plant. Of that number, around 300 are likely to be taken by government agencies, schools and the International Cooperation Administration for shipment to India.

Plans are afoot for much of the surplus equipment the next year to go into the National Industrial Equipment Reserve or to schools (*AM*—Jan 13 '58, p89).

Useful life is 7-10 years . . .

Maximum useful life of 7 to 10 years should be used by federal tax officials in depreciating machine tools, Philip R Marsilius, executive vice president Producto Machine Co and president National Tool and Die Manufacturers Association, recommended to the House Ways and Means Committee at its hearing on federal tax revision January 10. Bulletin F, he said, should be discarded altogether. He pointed out that some machine tools, through obsolescence and loss of accuracy from constant use, may become inadequate for today's precision work in five years or less.

Alternative methods of depreciating machines (declining balance and sum-of-digits) provided by 1954 Internal Revenue Code should be applied to used equipment as well as new, Mr Marsilius stressed. Many tool and die shops can afford to buy only used machines.



Arthur Grayson, Jr., Purchasing Agent of LeRoy Machine Company, LeRoy, N. Y., inspects equipment used in making automobile spindles and other auto parts. Machining efficiency is maintained through the use of Texaco Cleartex Oil, Sultex Oil, and Texaco Soluble Oil emulsion. Texaco Regal Oil R&O is used to keep hydraulic equipment free from rust, sludge and foam.

"Texaco helps keep operating costs down on more than 300 different machines"

— reports Arthur Grayson, Jr., of LeRoy Machine Co.

"Texaco has helped us get maximum performance from our heavy-duty metal working machines—lathes, broaches, grinders, and drill presses—for over ten years. How? One factor is Texaco's Lubrication Engineering Service. Texaco makes sure we always lubricate our machines properly—and use the right cutting fluid for each job."

Texaco service can save money and improve machine performance for you, too. The Texaco Lubrication Engineer begins with a complete plant analysis, and then adapts the following four-point program to your specific plant conditions:

- **He shows you how to cut inventory, through the use of selected multi-purpose cutting oils and lubricants.**
- **He shows you how to use these products for dependable operation, maximum production, and lower maintenance costs.**
- **He anticipates your needs by regular surveys and practical follow-up suggestions.**
- **He keeps on offering the most up-to-date products and information on how to use them.**

A Texaco Lubrication Engineer is ready and willing to offer complete information on Texaco products and service. Call the Texaco Distributing Plant nearest you—there are more than 2,000 in the 48 states—or write:

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LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

WHAT'S AHEAD... in Metalworking

TRENDS

Metalworking downturn may be leveling off . . .

Some indications that the downturn in metalworking production is becoming less pronounced are evident as we go into 1958. Production dropped three points on the American Machinist Index in January, as compared with five points in December.

But the downtrend is likely to continue at least through the first quarter. Any upswing that is likely to come will be in the late summer or fall, most metalworking executives predict. But it must be remembered that metalworking today, in spite of recent declines, is operating at a high rate.

Much will depend in 1958 upon the automotive and aircraft industries, whose ups and downs affect a host of supplier and service industries.

Because of current consumer resistance to the '58 models, it is entirely possible this year will see output of less than 5.5 million cars, down some 600,000 units from 1957. But if car prices are discounted enough, sales and production should just about stay level with 1957 totals.

Automotive parts producers have a record of "up one year, down the next." They chalked up a 5% production gain in 1957, so if this year follows previous trends, output will be down somewhat.

Aircraft outlook uncertain . . .

The aircraft and aircraft parts industries are, of course, a major question mark—dependent to a large extent upon government orders. And until those orders give the definite go-ahead for production, output will continue to decline. The turning point upward is expected sometime in the second half. The year should wind up about 10% below 1957 in these industries.

Gray iron foundry operations are down to around 58.2% of maximum commercial demand (940,000 tons), have been since November, when operations fell from October's 70.5%.

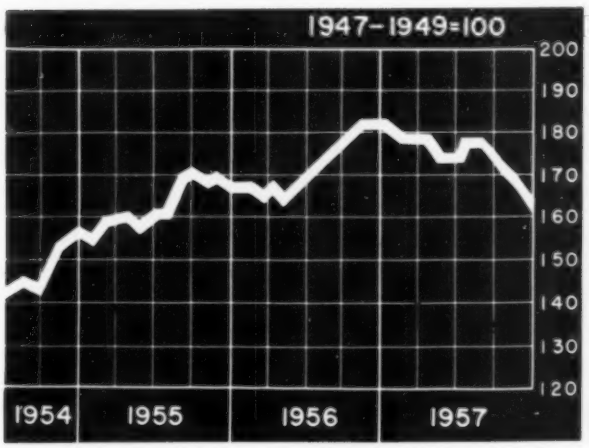
Manufacture of heavy electrical apparatus will be off just a little from the 1956-1957 peak.

New orders are down and backlogs are being eaten into. Appliance production is likely to point upward this year, reversing the 1957 trend. Sales conform rather closely to the trend in housing completions, since so many appliances now are part of a new house. Housing construction will be up in 1958.

Performance of the radio and television industry (production and sales, that is) promises improvement. Number of radio and TV sets to be built in 1958: around 22 million. Transistor radios and portable TV units are helping to stimulate demand. Radio sales were up and TV down last year. Office machinery is expected to do all right, with 1958 production and sales topping the 1957 gain. It thus will do better than Metalworking as a whole.

New orders recently have not come up to the peak attained early last year. But manufacturers are counting on a gain dollarwise of about 10% over 1957. In physical terms, the upturn is estimated at 3%. Farm implement makers feel that they will be doing well to keep within 5% of last year's output, which was just about equal to the 1956 total.

For the year ahead, farm income is expected to average the same as during the past year.



AMERICAN MACHINIST INDEX OF METALWORKING PRODUCTION

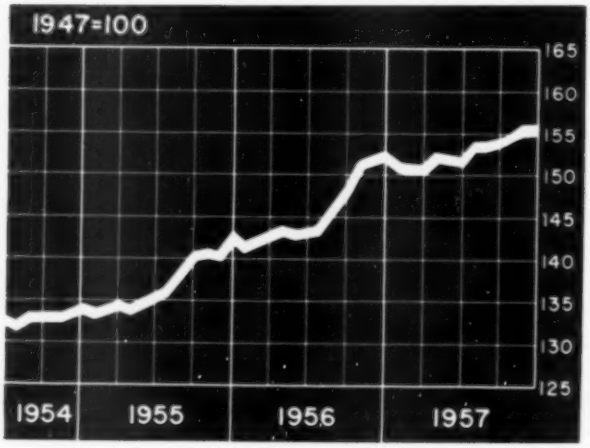
BASED ON MANHOURS WORKED IN THE FIVE COMPONENTS

	JAN. Estimated	DEC. Preliminary	NOV. Revised	DEC. Year Ago
Total Index	**161**	**164**	**169**	**182**
Machinery	138	142	155	
Electrical Machinery	194	199	218	
Autos	138	149	149	
Other Transportation	295	292	347	
Other Metalworking	142	145	145	

TRENDS WHAT'S AHEAD... in Business

AMERICAN MACHINIST INDEX OF METALWORKING PRICES

	JAN. Estimated	DEC. Preliminary	NOV. Revised	DEC. Year Ago
Total Index	**156.1**	**156.0**	**155.9**	**150.5**
Metalworking Machinery	183.0	183.0	174.4	
Other Machinery exc. Electrical	166.1	166.1	159.0	
Electrical Machinery	157.1	157.0	151.4	
Fabricated Metal Products	146.6	146.5	143.3	



1958 Outlook: not much change on the surface–but . . .

The experts by now are pretty well agreed that present business conditions will change little before 1958's end. Gross National Product will be up a little over 1957—$435 billion to $441 billion—and business as a whole will stay at today's levels.

But within the overall business framework, performance of individual industries will vary.

For instance, a survey of 24 key industries indicates that half of them expect to do better this year than last, 8 expect a decline, and four think they will hold about even. Overall industrial production will be down to around 139 on the Federal Reserve Index, compared with 143 last year.

But you can look for increases in housing starts and road-building, in government buying, and consumer spending on nondurable goods.

A lot of things have done their part in slowing down business: last fall's defense cutbacks; a broad-scale trimming of inventories; failure of the public to go for the '58 car models, the psychological effect of Russia's Sputniks on U S confidence, and cutbacks in business plans for new plant and equipment spending.

But the Sputnik scares have jolted the government into restoring defense cuts, the U S highway program is moving at long last, and inventory trimming has to stop somewhere—you can't make a product without materials. Too, consumer spending has been holding up well. Even the much-publicized drop in capital spending—an expected 7%—can't offset the fact that capital spending in 1958 will still be higher than in any year before 1956.

To summarize the 1958 outlook: this year should show some small gain over 1957 in total dollar volume of business, but individual industries vary widely in their forecasts. And one thing is certain, this will be a year of real competition.

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
Business Week Index of Activity (1947-1949=100)*	129.8	131.2	153.9
Steel ingot operation (thousands of tons)	1,538	1,515	2,467
Electric power output (million Kilowatt hours)	12,506	11,692	12,327
Production of automobiles and trucks	147,326	93,304	177,542
Engineering construction awards (Eng. News-Record—millions)	$219.9	$171.0	$335.0

MONTHLY BUSINESS INDICATORS

	Latest Month	Preceding Month	Year Ago
Index of industrial production (1947-1949=100)*	136	139	147
Index of durable manufactures production (1947-1949=100)*	148	153	167
Durable goods manufacturers' sales, millions*	$13,505	$13,932	$14,294
Machinery manufacturers' sales, millions*	$ 4,106	$ 4,265	$ 4,189
Durable goods manufacturers' new orders, millions	$12,326	$12,154	$15,776
Machinery manufacturers' new orders, millions	$ 3,602	$ 3,943	$ 4,720

* Seasonally adjusted

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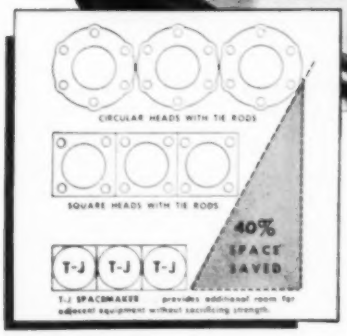

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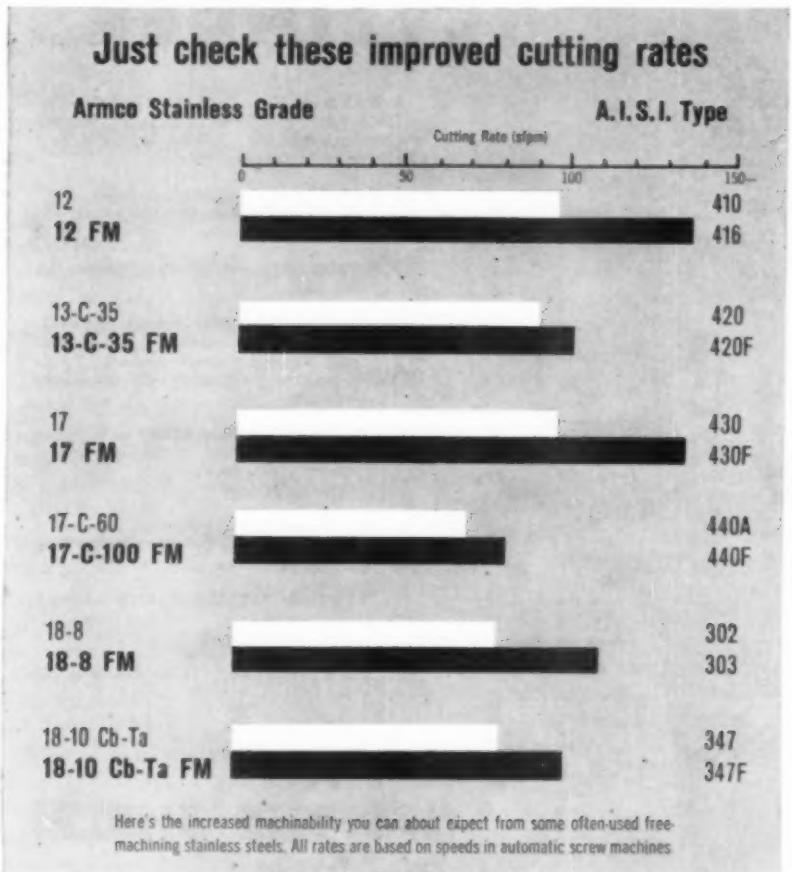
Why production steps up with ARMCO FREE-MACHINING Stainless Steels



Here's the increased machinability you can about expect from some often-used free-machining stainless steels. All rates are based on speeds in automatic screw machines

In service, the toughness of stainless steels gives them endurance that ordinary metals can't match. But in part-production, this very toughness can limit machining speeds. That's why Armco produces free-machining counterparts for many widely-used grades of stainless steel bar and wire. Small additions of certain elements make these special grades machine faster. Production rates jump.

TRY THEM

Here's how to prove it for yourself. If you now machine parts from a standard stainless steel, just contact your nearest Armco Sales Office or Armco Stainless Distributor. They will be glad to arrange for you to try out the Armco Free-Machining counterpart of the grade you are now using.

Or, if you would like more information about uniform-quality Armco Stainless Steel bar and wire, just fill in and mail the coupon.

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In addition to stainless steel sheet, strip, plate, bar and wire, Armco produces these other steels for top-quality products: ALUMINIZED STEEL, ZINCGRIP®, ZINCGRIP PAINTGRIP®, Cold-Rolled PAINTGRIP, Enameling Iron, Electrical Steels, High Strength Steels, Welded Steel Tubing, and Long Ternes, as well as high-quality hot- and cold-rolled sheets.

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American Machinist
MAGAZINE OF
METALWORKING PRODUCTION • ESTABLISHED 1877

Spending to Save

Almost every metalworking company is searching diligently for business. With decreased output, every company also is looking hard at all the ways and means that it can think of to cut costs.

Management is painfully aware that the plush days no longer are here. Free and easy spending is out-of-date. And free and easy treatment of production costs cannot be tolerated.

This sensible attitude . . .

does not mean, however, that spending should be stopped altogether. It may seem logical at times to adopt for a short period a "wait-and-see" policy. But if everyone did exactly that and stuck to it long enough, it would be the best possible assurance of a serious depression.

There is much to be said instead in favor of a policy of spending to save. This policy is sound in good times or bad. It is just as practical now, when things are not quite so good, as it was when business was booming.

Spending to save probably sounds paradoxical. You may say that it is just a "catch phrase" and makes no sense. The truth is, though, that it makes a lot of sense.

Perhaps your production costs are higher than they should be because you are using old, high-cost equipment. How long has it been since you have checked the production rates of your machines, the direct and indirect labor cost, and maintenance charges? How long has it been since you have made a direct cost comparison between your present machines and what an investment in new machines, not necessarily of the same type, could do for you?

Some very alert metalworking managements now are deep in a study of such comparisons. They want to know what's what. And they want to know it for one overriding reason. They have a passion just now for keeping costs down.

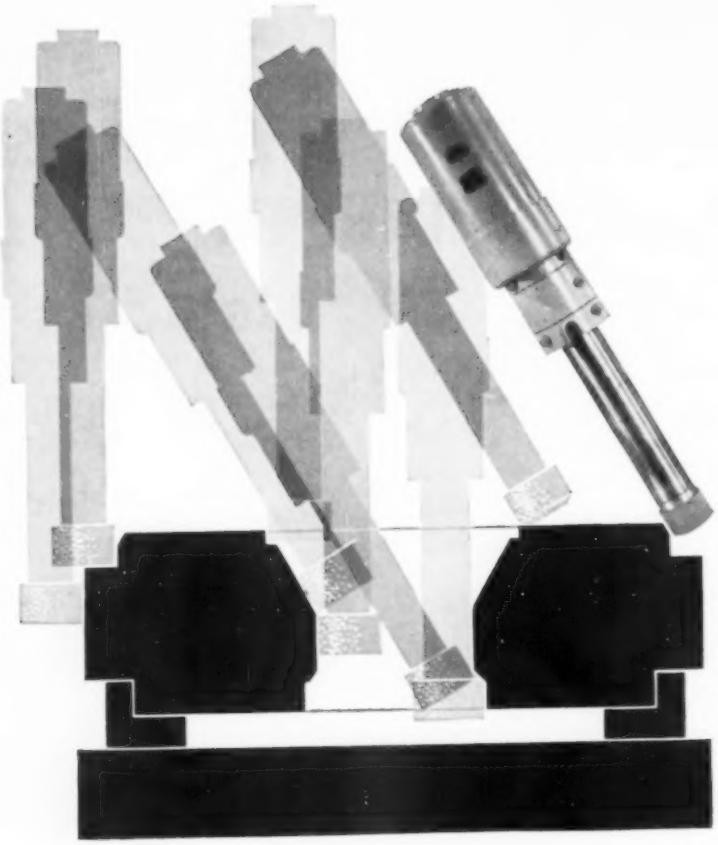
They recognize that maintaining a reasonable profit margin has become a prime problem. One of the best ways to maintain that margin is to control costs. If spending money on new equipment will enable them to control costs and thereby save money, they will not hesitate to spend it.

The saving may not show up . . .

in reduced labor expense alone. It may come in other ways, such as a reduction in inventories that conserves capital resources.

Whatever you do, don't dismiss the idea of spending to save as not worth looking into. It has great merit and has proved its soundness over and over again. Better see what it has in store for you.

Burnham Finney EDITOR



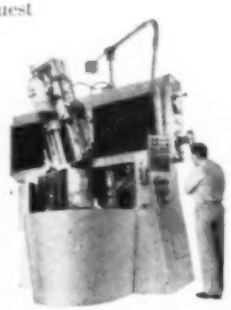
ONE SET-UP: NINE JOBS. Sectioned workpiece shows the flexibility of a Springfield Vertical Universal Grinder.

Grinders that provoke thought

The above diagram illustrates one feature of a relatively new type of grinding—vertical universal grinding. It has captured the imagination of several astute missile and automotive production men, because up to now few people even thought about grinding *that* way. The diagram shows 9 grinding operations on a work piece with one setup of a Springfield Universal Grinder. This is a standard machine, not a special. Springfield has been making such grinders for 11 years.

Gravity works for the operator; the workpiece is held on a horizontal face plate. The grinding spindle (or spindles) is rigidly mounted, but easily positioned. Control is electro-hydraulic. On more elaborate machines automatic sizing and cycling are common features.

Because of the profit potential to you, The Springfield Machine Tool Company would like you to study a booklet on the principle of vertical grinding. And we especially would like to talk with you about vertical contour grinding. Request Bulletin 197A.



The Springfield Machine Tool Company, Springfield, Ohio

MAKERS OF ENGINE AND TOOL ROOM LATHES AND VERTICAL UNIVERSAL GRINDERS

SPRINGFIELD

American Machinist

1958

PRODUCTION PREVIEW

HERE ARE THE LATEST

MACHINES EQUIPMENT MATERIALS PARTS

Capsule descriptions of all new equipment covered in our pages in 1957 are presented in this 45th annual review. Each item carries the date of the original description

CLASSIFIED INDEX OF EQUIPMENT

MACHINE TOOLS AND ATTACHMENTS
106 Turning
112 Boring
115 Planing and Shaping
116 Drilling
121 Broaching
122 Tapping and Threading
124 Milling
129 Electrical Discharge, Ultrasonic
130 Gear Cutting and Finishing
133 Grinding, Honing, Lapping
142 Cutoff and Filing
146 Special Machines
150 Automatic Machine Control

TOOLS AND ACCESSORIES
153 Workholders
158 Toolholders
160 Stock Feeds and Positioners
164 Toolbits and Cutters
170 Grinding Wheels and Dressers
171 Portable Power Tools
173 Hand Tools
174 Marking Equipment
176 Lubricating Equipment
177 Coolants, Cutting Oils

FORMING, FORGING, CASTING
179 Mechanical Presses
185 Hydraulic Presses
188 Brakes, Shears, Bending
195 Forging
197 Die Casters, Plastic Molders
199 Pressroom Accessories
201 Punches and Dies

WELDING AND ASSEMBLY
202 Gas Welding and Cutting
203 Electric Welding
207 Welding Accessories
209 Soldering, Brazing, Riveting
211 Assembly Machines

HEATING AND HEAT TREATING
213 Heating and Heat Treating

CLEANING AND FINISHING
217 Cleaning and Finishing

INSPECTION AND LAYOUT
223 Measuring Equipment
224 Gages and Comparators
228 Testing Equipment
230 Optical Equipment
232 Indicators and Controllers
233 Layout Equipment

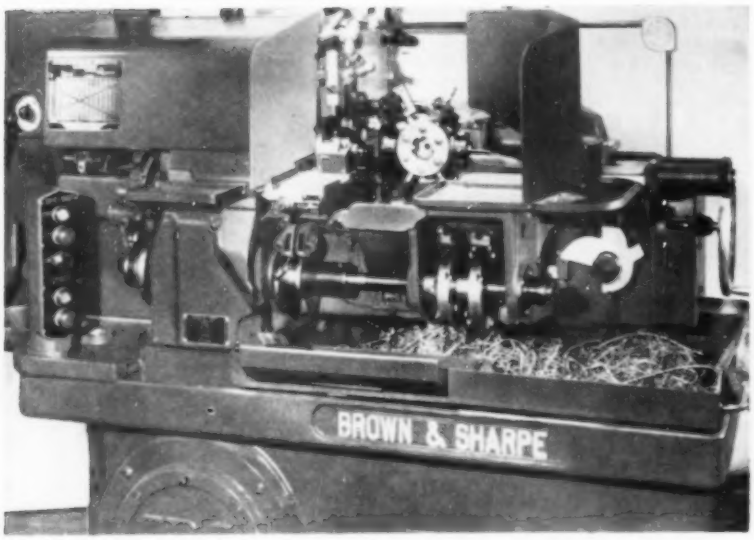
PLANT SERVICE EQUIPMENT
234 Industrial Trucks
239 Conveyors
241 Misc Materials Handling
244 Drafting, Dust Collectors
245 Floor Service
246 Lighting, Safety
247 Miscellaneous

PARTS AND MATERIALS
250 Electrical
253 Mechanical
255 Hydraulic
258 Pneumatic
259 Fastening Devices
260 Materials
264 Processes

American Machinist

1958 TURNING

PRODUCTION PREVIEW



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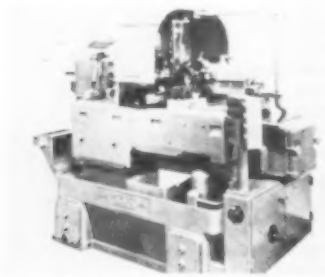
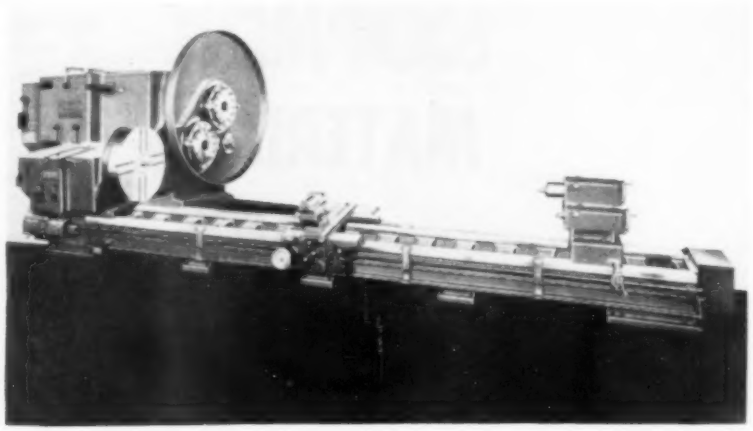
AUTOMATIC—*Brown & Sharpe Mfg Co, Providence, RI.* No. 2 Automatic, available in three capacities, takes ¾, 1¼, or 1½-in.-dia stock and consistently holds limits to 0.0005 in. Range of 18 high spindle speeds is available, with top speed of 5050 rpm on ¾-in.-capacity spindle, 3500 rpm on 1¼-in., and 2450 rpm on 1½-in. spindle. Productive capacities range from 1 2/3 sec per part to 480 sec per part. Spindle is of unit construction, and may be readily removed if necessary (Apr 22, p182).



AUTOMATIC—*Distributed by Russell, Holbrook & Henderson, Inc, 232 Madison Ave, New York, NY.* Tarex Model TAR/L is basic, fully integrated machine. Cam shaft accelerator, optional spindle speed units, single or compound front and rear slides, and high-speed drilling attachments can be added. Swiss machine comes in three sizes: 1¼, 1⅝, and 2 1/16-in. capacity. Max chucking dia is 4½ in.; swing, 6 in.; spindle speed, 55 to 4730 rpm; can be supplied with either 6- or 8-position turret and single or double indexing (Mar 25, p202).

COLLET CLOSER—*F W Derbyshire, Inc, Waltham, Mass.* Hand-Quick collet closer can be used on cone-bearing or ball-bearing lathes, including company's Model 750, Webster-Whitcomb, Magnus, and Elect (Mar 25, p188).



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TURRET LATHE—*Potter & Johnston Co, Pawtucket, RI.* Automatic turret lathe, Model 8-U, has 40-in.-dia swing over bed ways, chuck sizes to 30 in. and a 50-hp motor. Lathe has extra speed and power needed to remove tough alloys fast and extra capacity and rigidity required to produce large components quickly, accurately and economically on fully automatic cycle basis (Sep 9, p187).

LATHE—*South Bend Lathe Works, South Bend 22, Ind.* Designed for machining tubing, shafting, and other long work, lathe takes up to 129 in. between centers. Swing over cross-slide is 9⅝ in. (11¼ in. without chip guard); max capacity over bed ways is 16¼-in. dia. Spindle speeds range from 15 to 980 rpm. Quick change box provides 48 thread-cutting feeds, 48 power longitudinal carriage feeds, and 48 power cross-feeds (May 6, p176).

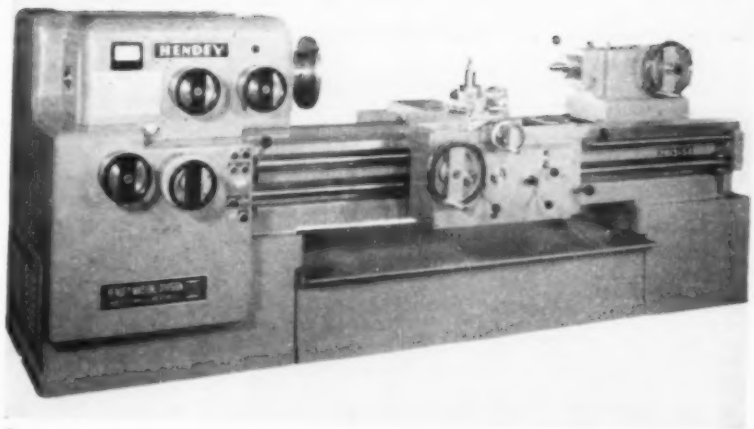
SEMI-AUTOMATIC LATHE—*Imported by Carl Hirschmann Co, Inc, 30 Park Ave, Manhasset, NY.* Swiss-built Tummer Type MR-6020 lathe is equipped with dual-head arrangement. Speeds to 3500 rpm are obtainable; coordinate cam action insures precision control of cutting tool. 2½-in. capacity of chuck can be increased with special devices available (Jan 14, p165).

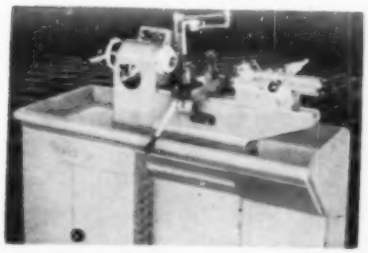
LATHE—*Axelson Mfg Co, Div of US Industries, Inc, 5947 Sheila St, Los Angeles 22, Calif.* Heavy-duty lathe, Model 4025, can be used with equal effectiveness on rough or precision cuts. It features 75-hp headstock and 24 spindle speeds from 6 to 750 rpm. It has capacity of 40 in. of swing over bedways and 25 in. over cross-slide. There are 81 feeds, ranging from 0.005 to 0.351 in. per rev of spindle; 45 threads, from 1 to 30 in., can be cut (Jun 17, p194).

DUAL-SPINDLE LATHE — *Boye & Emmes Machine Tool Co, 81 Caldwell Dr, Cincinnati 16, Ohio.* Dual-spindle lathe provides 60-in. swing over bed with upper spindle and 40-in. swing with lower spindle to handle large and small dia work. Lower spindle is provided with 12 speeds between 6 and 250 rpm. Upper spindle has two ranges of 12 speeds, 3.6 to 150 rpm and 0.8 to 33.3 rpm (Feb 11, p158).

POWER FEED—*Sandex Automation, Inc, 678 Berriman St, Brooklyn 8, NY.* Model HR-1 turret-lathe converter features a separate feed for each turret position, with infinitely variable feed adjustments. Unit operates on 50 to 100-psi pressure and incorporates a hydraulic cylinder, giving it a very precise feed easily varied by turning a feed screw for each position. Turret is indexed automatically (Feb 25, p189).

VERTICAL TURRET LATHE—*Distributed by Aaron Machinery Co, 45 Crosby St, New York 12, NY.* German-made Niles Imperial has 41-in. swing with side head in position, 51-in. swing with side head below table. Twelve face plate speeds are available, controlled by two levers. Disk clutch between the driven belt pulley and the drive gears is designed to transfer full drive power (Oct 7, p178).





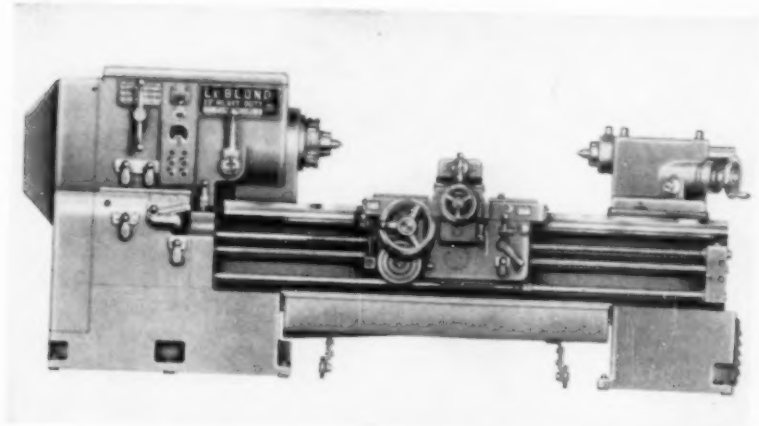
HAND TURRET LATHE—*Wade Tool Co, Waltham, Mass.* Hand turret lathe No. 94 has infinitely adjustable speeds and features an electric clutch for speed changing and reversing functions. Pushbuttons are used to change spindle speeds over range of 140 to 3500 rpm. Double-action cross-slide employs variable speed system which gives max control for holding size, yet allows rapid tool approach (Jun 3, p148).

BED WAYS—*Rockwell Mfg Co, Delta Power Tool Div, 414 N Lexington Ave, Pittsburgh 8, Penna.* Flame-hardened bed ways are now available on Delta 11-in. metalworking lathes in both the 4-ft and 5-ft-bed models. The new bed ways—available at an extra cost of $75 on the 4-ft and $100 on the 5-ft bed models—are flame hardened, then precision ground with a diamond-dressed wheel (Dec 16, p192).

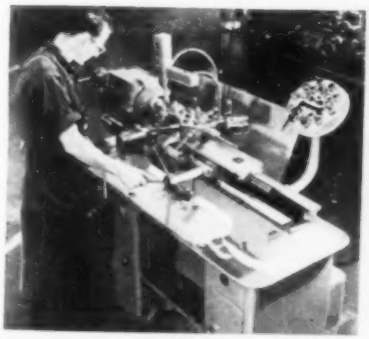
GEARED-HEAD LATHES — *Barber-Colman Co, Hendey Machine Div, Rockford, Ill.* New line of 32-speed, all-geared-head lathes for toolroom and production turning features two models: Model 2013 with 21-in. swing over bed ways and Model 2516 with 25-in. swing. All geared head makes available 32 spindle speeds from 13 to 1500 rpm. They are also available with max speeds of 1000 or 2000 rpm. Feed range is from 0.0015 to 0.091 ipr (Sep 23, p186).

TRAVEL CONTROL—*Joslyn-Hudson Corp, Dept 12, 2040 Colorado Ave, Santa Monica, Calif.* Acra-Stop, designed for accurate production control of repeat machine operations, measures cutting to within 0.001 in. Device makes it possible to set up lathe with up to 104 precision stops in 15-in. run. Price, with mounting accessories, is $189.50 (Jun 17, p214).

CLUTCH AND BRAKE—*Nebel Machine Tool Corp, Cincinnati 25, Ohio.* Warner electric clutch and brake, available as extra equipment on Nebel lathes, has many features including faster braking than with cone-type friction brake, pushbutton control, adjustable acceleration and deceleration rates, low maintenance (May 20, p220).



CENTERLESS BAR-TURNING MACHINE—*Sutton Engineering Co, First National Bank Bldg, Pittsburgh 22, Penna.* Manufactured under a license from Sir James Norton & Co, Ltd, Manchester, England, machine is designed for rough or precision turning of ferrous and non-ferrous bars, including bars of titanium and uranium. Ovality tolerances of ± 0.00025 in. and max dia variation of ±0.001 in. in any 20 ft length of bar can be achieved with a finish comparable to centerless grinding (Nov 4, p198).

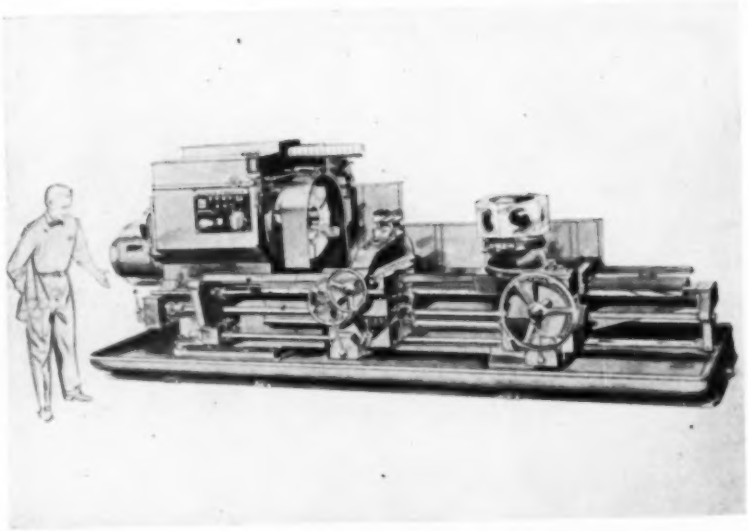


HAND SCREW MACHINE—*Rockwell Mfg Co, Delta Power Tool Div, 475 N Lexington Ave, Pittsburgh 8, Penna.* Machine features a bed turret with six stations for up to six operations. A pilot wheel feed is the outstanding feature of a completely new tool post cross-slide. This feature combines rapid slide movement with 8-in. travel. T-slots in the tool-post pad and slide make possible transverse and longitudinal adjustment without disturbing the saddle on the bed (Nov 18, p192).

HEAVY-DUTY LATHE — *R K LeBlond Machine Tool Co, Madison & Edwards Rds, Cincinnati 8, Ohio.* 20-in. lathe, said to be first designed from ground up to use 40 hp effectively, will permit max efficiency with ceramic and carbide tools. Machine has 36 speeds, from 10 to 1300 rpm. Manufacturer claims plenty of power even at low speeds—at 10 rpm a cut can be taken as deep as ½ in. in 16-in.-dia work, feeding at 0.063 ipr (Jul 1, p138).

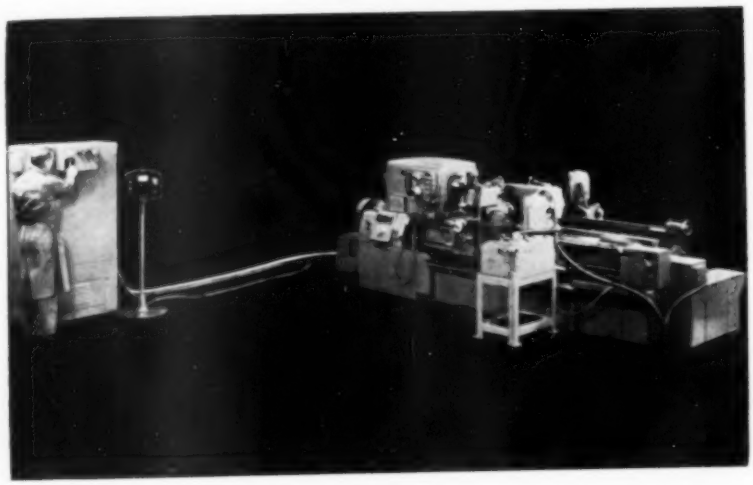
TURNING

TURRET LATHE—*Warner & Swasey Co, 5701 Carnegie Ave, Cleveland, Ohio.* No. 5-A saddle-type turret lathe is fifth, and largest, model available in heavy-duty line. Machine offers 28 unduplicated turning speeds, from 10 to 280 rpm. Swing is 36 in. Cross-slide and saddle aprons are equipped with power rapid traverse (Jul 15, p182).



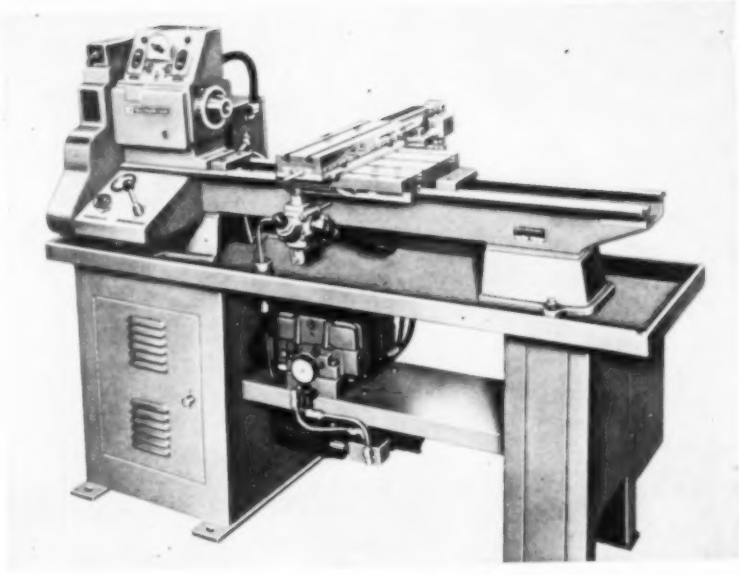
HEAVY-DUTY LATHE—*Distributed by Barer Engineering and Machinery Co Ltd, Champlain, NY.* German-made Barer-Meuser M III L lathe has 20, 24 or 28-in. swing and center distances of 40 to 240 in. Among features offered are 262 different threads; 88 longitudinal feeds; 88 cross feeds; 12 forward speeds in two ranges, 22 to 1000 and 32 to 1400 rpm, and 6 reverse speeds. A larger series, the M IV L, is also available (Nov 4, p190).

PIPE AND FLANGE FACING MACHINE—*Forney's Inc, P O Box 310, New Castle, Penna.* Made for manual or electric-hydraulic automatic cycle operation, machine accommodates diameters from 2 to 24 in. With various fixtures and rotary tables instead of steady rest, it can face flanged valves and fittings from 2 to 36-in. dia (Feb 25, p208).



REMOTE CONTROL SYSTEM—*Monarch Machine Tool Co, Sidney, Ohio.* System making it possible to operate Series 62 lathes with air-gage tracer equipment from distance of 12 ft or more is designed for special applications, such as machining radioactive materials, contouring solid propellants for rockets and missiles, or wherever desirable to position operator away from machine (Aug 26, p173).

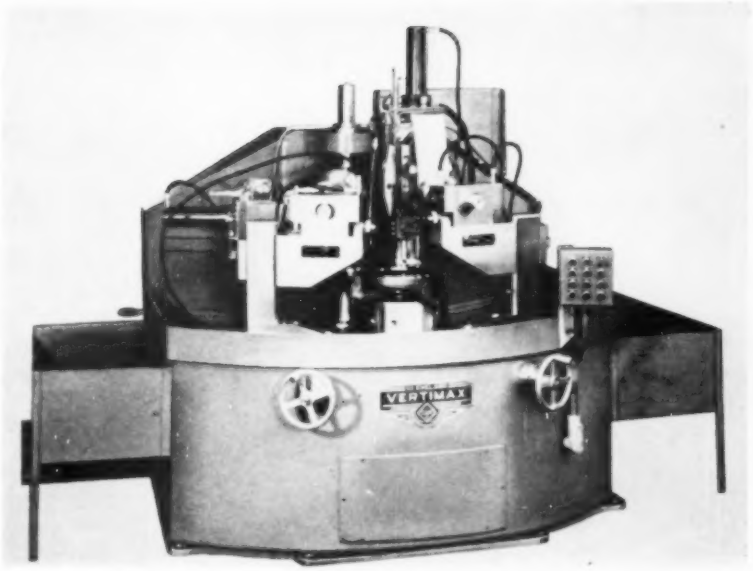
CABINET-MOUNTED LATHE—*F W Derbyshire, Inc, Waltham, Mass.* Model A lathe with ½-in.-capacity through spindle is available on 48x21-in. steel cabinet which houses an oil cooling system. Over-all length of lathe is 24 in., bed length is 22 in. Swing is 5.905 in., distance between centers is 12 in. Mechanical clutch is available (Aug 26, p152).



COMMUTATOR - TURNING MACHINE—*Motor-Mation, Inc, 116 W 9th St, North Canton, Ohio.* Model CTM-2000 employs diamond cutting tools and turns out 500 to 700 finished commutators per hr. Rough- and finish-turning can be performed simultaneously by using two diamond tools. Machine can turn parts up to 2-in. dia and 2-in. length with tolerance of 0.0003 in. and 15 mu-in. finish (Apr 8,

TURNING AND BORING MACHINE—*Atlas Press Co, Clausing Div, 2101 N Pitcher St, Kalamazoo, Mich.* Hydra-Cycle is semi-automatic turning and boring machine that performs several close-tolerance machining operations simultaneously or in continuous sequence—turning, boring, facing, forming, grooving, chamfering, beveling, and cutoff. Feed of table and cross-slide are infinitely adjustable between 3/16 and 60 ipm (Jul 15, p183).

VERTICAL PRODUCTION LATHE—*Cleveland Hobbing Machine Co, 1311 Chardon Rd, Cleveland 17, Ohio.* Vertimax toolslides are supported at both ends, providing max rigidity against cutting forces. Automatic rapid tool approach, and automatic tool relief on return stroke are standard features. Machines are available completely automated—complete automatic loading and unloading, semi-automatic loading and unloading, size controls, additional toolslides, hydraulic profiling (Apr 22, p183).



LATHES—*R K LeBlond Machine Tool Co, Cincinnati 8, Ohio.* Latest additions to company's Regal line, these 21 and 24-in. Regal lathes give capacity, speeds, and horsepower usually found only in heavier-type machines. Both models can be obtained with standard 7½-hp drive, and optional 10 hp for high speed ranges; electric clutch and brake; feed reverse at the apron; heat-treated gears in the head; quick-change box and apron (Dec 2, p150).

TRACER ATTACHMENT — *Turchan Follower Machine Co, PO Box 6055, Dearborn 9, Mich.* Designed to reproduce square or tapered shoulders, radii, grinding necks, thread runout grooves, tapers, contours, and tapered OD and ID forms, attachment duplicates while making a complete and uninterrupted pass over workpiece. Full lathe swing distance is retained. Opposing shoulder, 90° shoulders and intricate boring operations are accomplished without additional slides (Nov 18, p202).

LATHE — *Boye & Emmes Machine Tool Co, 81 Caldwell Drive, Hartwell, Cincinnati 16, Ohio.* Model CB2-2516 has a max swing clearance of 25 in. over bed and carriage wings, and 16 in. over compound. The back-gear shaft and gears are located in front of the spindle where the downward pressure of the gears neutralizes the effect of the tool lift under heavy cuts. Headstock offers 18 speeds, in geometric progression, from 20 to 1500 rpm (Jun 17, p184).

LATHE — *Distributed by Wickman Products Corp, 10325 Capital Ave, Oak Park 37, Mich.* Little John (made in England) is reported to offer many features usually found only in much larger equipment. Lathe swings 10¼ in. admitting 24 in. between center, with spindle bore of 1 1/32 in. Headstock houses spindle, back gears, layshaft and switch. The 1-hp, infinitely adjustable speed drive provides speeds from 38 to 1750 rpm (Dec 30, p134).

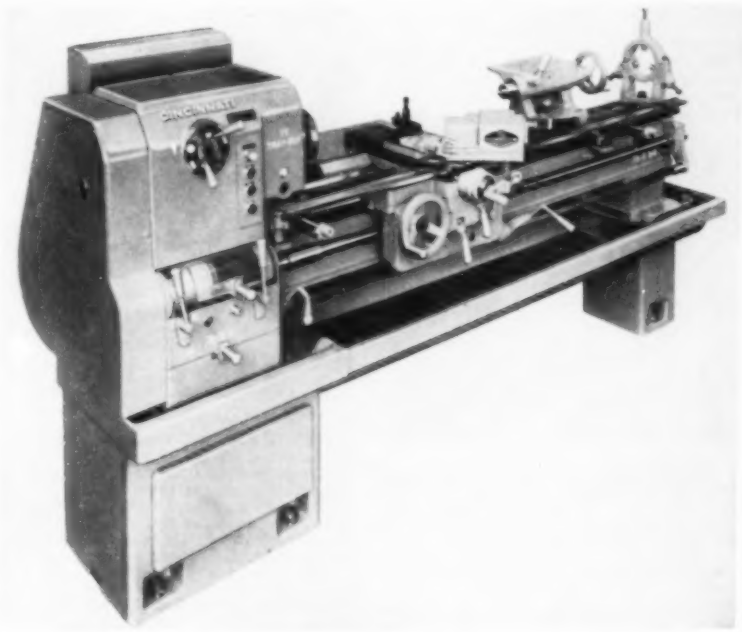
TRACER LATHE—*Cincinnati Lathe & Tool Co, Cincinnati 9, Ohio.* Hydraguide tracer lathe, available in 15 and 18-in.-swing sizes, provides automatic turning of multiple-dia shafts and contoured workpieces while retaining versatility of standard lathe. Lathes are available with center distances from 30 to 114 in. Twelve spindle speeds range from 37 to 1470 rpm; carriage feed range of 0.0019 to 0.1215 ipr; thread range of 1½ to 92 threads per in. (Jun 3, p152).

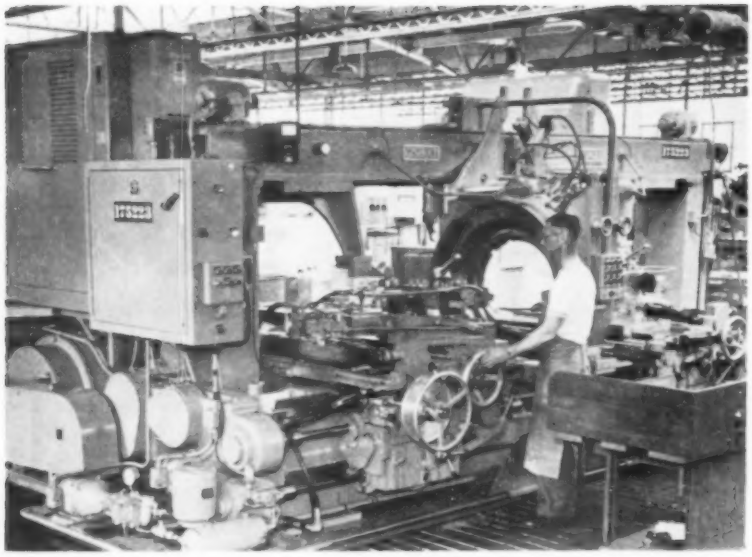
LEVER CLOSER—*Wade Tool Co, 49 River St, Waltham, 54, Mass.* Air-operated lever closer for use on Wade machines is operated by air-cylinder plunger, controlled by electric valves and tied to simple mechanical linkage. Lever-closer fingers are actuated by ball bearings (Mar 11, p184).

LATHE BLOCK—*Nebel Machine Tool Corp, Cincinnati 25, Ohio.* Lathe block, for company's removable-block gap lathes, leaves gap for purposes of accommodating large face plates. Large face plate can then be used for all chucking jobs. Distance from face plate to end of gap remains unchanged (May 20, p224).

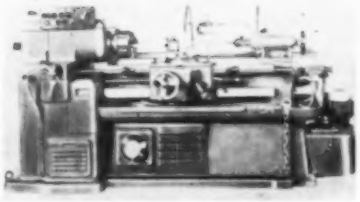
BENCH ENGINE LATHE — *King Corp, 3157 Euclid Ave, Cleveland 15, Ohio.* Little Giant, for work on metal, wood, or plastic, has bed length of 30 in., cutting range of 20 in., swing of 7 in. Unit, equipped with three-speed pulley, operates at 1750 rpm at ¼ hp (Dec 30, p127).

TAILSTOCK DIAL—*Lloyd Tool Corp, 1620 N Broadway, Burbank, Calif.* Dial No. 956 is supplied complete with reference pointer and self-tapping screw. Also available is cross-slide dial, No. 351, which has colored reference markers for easier reading, and a locking device to hold critical settings. Dials are priced at $12.95 each (Sep 9, p212).





TRACER LATHE—*Gisholt Machine Co, 1271 E Washington Ave, Madison 10, Wis.* Jet compressor and turbine disks are machined on tracer-type center-drive lathe built for Pratt & Whitney Aircraft. Machine's ability to cut on both sides of disk simultaneously cuts time, and improves accuracy by balancing pressure on each side. Time for machining a jet compressor disk has been reduced from 281 to 181 min (Mar 25, p196).



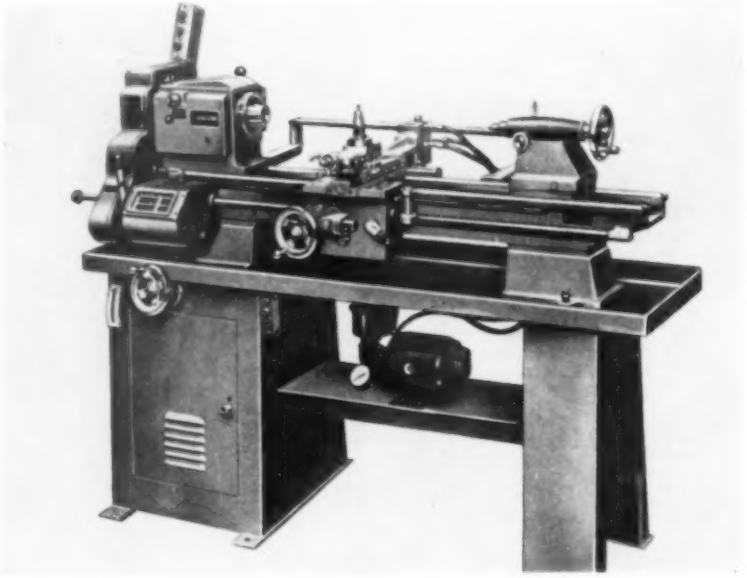
THREAD-CUTTING LATHE — *Man-Au-Cycle Corp of America, 132 53rd St, Brooklyn, NY.* Hydro-Magnetic single point thread-cutting lathe, said to be the world's fastest for long or short, internal or external work, handles threaded lengths of up to 32 in., has a lead capacity of 0.0250 to 2.00 in. and a 13-in.-dia swing. Other features include cutting speed up to 400 lineal ipm for ceramic tool operation (Oct 21, p211).

TRACER ATTACHMENT — *Hendey Machine Div, Barber-Colman Co, Rockford, Ill.* Hydraulic tracer attachment, for use on company's No. 2E lathe, replaces standard compound and is held in place by two bolts. Two additional bolts hold down templet-holding bracket. Tracer unit comes as package, with pump and sump mounted on floor at rear of machine (Jan 14, p162).

LATHE—*Distributed by Aaron Machinery Co, Inc, 45 Crosby St, New York 12, NY.* Schaerer lathes (German) are available with swings from 20 to 44 in. and bed lengths to 35 in. They feature centralized automatic lubrication, and underslung, double V-ways. Headstocks have 24 speeds with a speed ratio of 1:200. Profile copying attachment is hydraulically operated and can be fitted to machine (Aug 26, p170).

HIGH-SPEED LATHE—*Imported by Parker Machine Co, Inc, 158 Pioneer St, Brooklyn 31, NY.* S450 17-in. lathe, built in Belgium by Le Progress Industrial, S A, has 18 spindle speeds ranging from 15 to 1500 rpm in geometric progression. Quick-change gear box provides 40 feeds for turning and facing, 40 U S standard threads, 40 metric and, in addition, 40 coarse threads (Jul 1, p146).

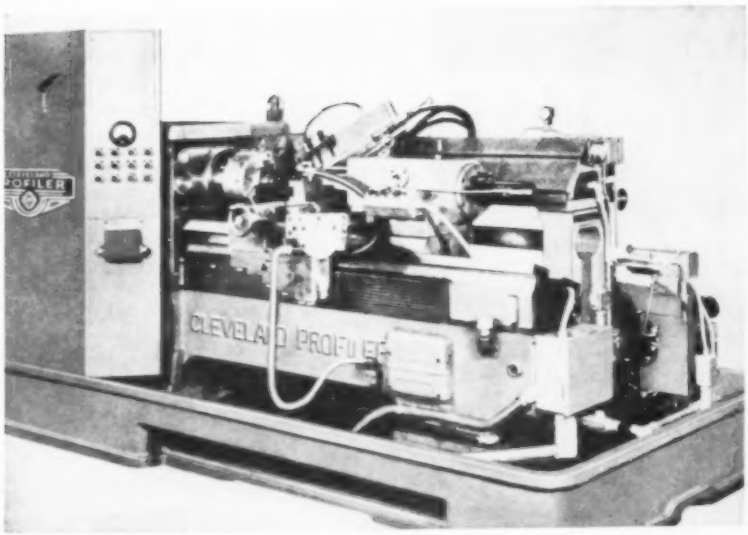
TURRET DRIVE—*Acme Industrial Co, 200 N Laflin St, Chicago, Ill.* Hydraulically operated turret-drive, designated Hydrive, powers self-indexing lathes from bench size to No. 5 turret lathes. Unit automates turret, feeds the cross-slide, advances bar stock, reverses direction of spindle rotation for tapping, and opens and closes the collet (Aug 12, p161).



TRACER LATHE — *Atlas Press Co, Kalamazoo, Mich.* No. 6390 12-in. heavy-duty hydraulic duplicating lathe has spindle speeds from 43 to 222 rpm in back-gear drive and from 250 to 1300 rpm in open-belt drive without stopping lathe or shifting belts. Lathe has 59-in. bed, 12¾-in. swing over bed, 12⅜-in. swing over saddle wings, and 7⅝-in. swing over cross slide. Distance between centers is 33½ in. (Feb 25, p191).

EXTRA-HEAVY-DUTY LATHE — *Barer Engineering & Machinery Co, Ltd, Champlain, NY.* Lathe is available in two models: Barer-Meuser M VII S has 48 or 56-in. swing; the M VIII S has 60-, 68-, or 78-in. swing. Lathes have center distances up to 40 ft and are available with one or more carriages. Made in Germany, machines have headstocks which give 12 low face plate speeds and 18 high spindle speeds (May 6, p180).

PROFILE LATHE—*Cleveland Hobbing Machine Co, 1311 Chardon Rd, Cleveland 17, Ohio.* Profiler, an electrically controlled, hydraulically actuated profile lathe, is built to permit full utilization of advantages of carbide and ceramic tools at speeds to 5000 rpm. Machine duplicates from flat or round templets or simply from the sample part (Jul 15, p184).

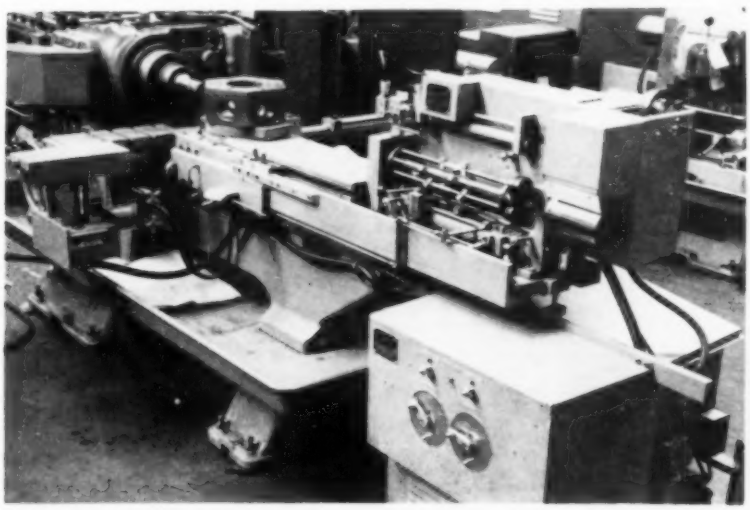


SECONDARY-OPERATIONS TURRET LATHE—*Clark Engineering & Mfg Co, Racine, Wis.* Cem-Way No. 00 turret lathe, primarily intended for secondary operations, will center, cut-off, spotface, drill, thread, turn, form, chamfer, and pin-point round workpieces up to ⅝ in. in diameter. It can be equipped with a single-speed or a two-speed motor to provide three or six spindle speeds (Jul 1, p132).

LATHE—*R K LeBlond Machine Tool Co, Cincinnati 8, Ohio.* Lowcost manufacturing lathe, called the Rapid Production Lathe, is available in 17 or 20-in.-swing sizes and is designed for manufacturing assignments. Beginning with the choice of swing sizes, many basic options are available. First, choice of speed ranges. On the 17-in., 70 to 700 or 105 to 1050 rpm; on the 20-in., 57 to 600 or 85 to 90 rpm. Other options available include Hydra-Trace hydraulic tracing, automatic facing, air-operated chucks (Nov 18, p191).

TRACER LATHE—*Elgin Tool Works, Inc, 1770 Berteau Ave, Chicago 13, Ill.* Tracer lathe, designed to duplicate pieceparts within 0.0003 in., is provided with pushbutton starting for automatic cycle of carriage and spindle; and pushbutton stop of automatic cycle which returns carriage to starting position with tool and stylus retracted. Speeds are infinitely adjustable from 120 to 2900 rpm (Sep 23, p187).

LATHES—*Lodge & Shipley Co, 3055 Colerain Ave, Cincinnati 25, Ohio.* New Powershift Preselector lathes feature a single dial on the headstock. This is used to preselect cutting speeds. Machines are available in ratings of 1610 (13 in.), 2013 (16 in.) and 2013-17 (20 in.) in engine, toolmaker, gap models and in 45° and 90° Copymatic tracer controlled types (Dec 30, p123).



HYDRAULIC DRIVE—*Jones & Lamson Machine Co, Springfield, Vt.* Hydraulic drive manufactured by Lynn Mfg. Co, Minneapolis, Minn, provides fully automatic cycling on Jones & Lamson ram-type turret lathes—including spindle start, stop and reverse; selection of speeds; rapid tool advance; rate of feed; dwell; back feed; rapid tool return and indexing of turret at end of cut; cross-slide operation; open and close collet chucks; and control of indexing chucks and fixtures (Sep 9, p184).

HIGH-SPEED LATHE — *Baldwin-Lima-Hamilton Corp, Hamilton Div, Hamilton, Ohio.* Niles A-50, with 50-in. faceplate, swings 39 in. over carriage bridge and 52 in. over carriage wings and bed. Machine was developed for high-speed carbide tool service. Spindle speed range is 1.5 to 182 rpm; feed speed range is 0.0025 to 0.625 ipr for longitudinal and 0.0012 to 0.312 ipr for cross feed (Jul 1, p144).

TOOLROOM LATHE — *Imported by Maserati Corp of America, Westbury, LI, NY.* Westbury lathe, made in Italy, features 12-in. swing over bed, 17¾-in. swing in gap, and 32 in. between centers. Features include anti-loosening device for spindle nose, hardened and ground headstock gears, V-belt drive, and foot brake. Norton gear box is optional (Mar 11, p188).

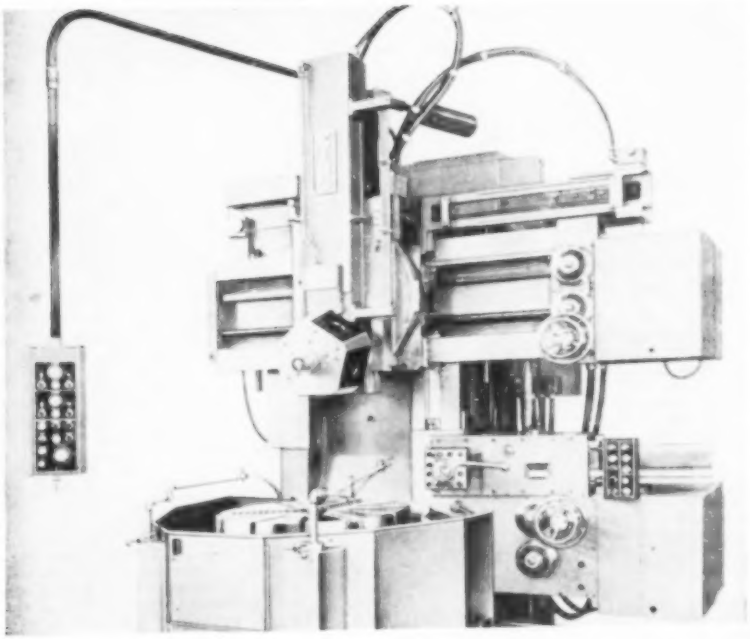
LATHES—*Imported by S & S Machinery Co, 140 53rd St, Brooklyn, NY.* Belgian-made lathes called Mondiale come in 12 sizes ranging from 12 x 20 in. up to 20 x 100 in. Final high-speed spindle drive is actuated by direct V-belt transmission. Longitudinal and cross feeds are operated by single lever. Feedshaft tripping device interrupts longitudinal and cross motions within microscopic limits (Feb 11, p161).

LATHE CLUTCH ACCESSORY — *Olds Machine Works, 5941 Dixie Highway, Saginaw, Mich.* Unit steps up production by eliminating time formerly lost in waiting for lathe spindle to stop and, at same time, by speeding up tapping and reaming operations. By eliminating reaching across machine to stop or start it, unit also acts as safety device (Jul 15, p186).

American Machinist

1958 BORING

PRODUCTION PREVIEW



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VERTICAL BORING MACHINE — *American Steel Foundries, King Machine Tool Div. 1150-A Tennessee Ave, Cincinnati 29, Ohio.* This 36-in., electrically controlled boring mill is equipped with automatic feed stops. Adjustable stops are provided for vertical and horizontal feed control of all heads. Expanded feed and speed ranges provide 24 feeds from 0.0016 to 0.250 in. per table revolution, and 24 speeds (Aug 26, p155).

BORING MACHINE — *Portage Machine Co, 1026 Sweitzer Ave, Akron 11, Ohio.* A new 36,000-lb, 5-in.-dia spindle horizontal boring, drilling and milling machine, the No. 5 is available with a vertical head travel of 48 in. and a cross travel of table on saddle of 60 in. The table working surface is 36 x 72 in. Thirty-four speeds are available, ranging from 7 to 1000 rpm. Max distance from spindle sleeve to tail block is 90 in. (Oct 7, p165).

UNIVERSAL-JOINT YOKES — *Ex-Cell-O Corp, 1200 Oakman Blvd, Detroit 32, Mich.* Automotive parts are machined in boring machine which permits simultaneous operations at both ends of part. Malleable-iron yokes are fixture-clamped and two holes are finish bored. 3-station, hydraulically-operated fixture and 3 boring spindles on each slide produce three machined yokes in each automatic cycle (Jun 3, p168).

BORING MILL—*W B Knight Machinery Co, Vandeventer & W Pine Blvds, St Louis 8, Mo.* No. 60 vertical boring and milling machine is built in two sizes, each with capacity of 30 in. Smaller unit, with 18 x 52-in. bed-type table, has 18-in. cross travel and 28-in. longitudinal travel. Larger unit has an 18 x 60-in. table, with 18-in. cross and 36-in. longitudinal travel (Mar 25, p191).

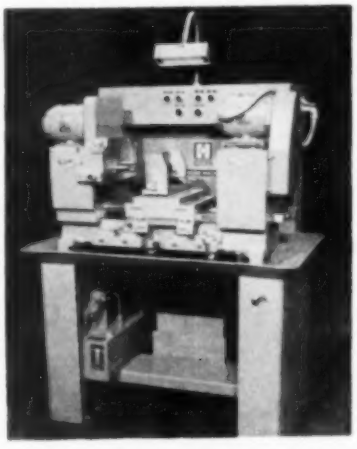
GEAR HOUSINGS—*Hartford Special Machinery Co, 282 Homestead Ave, Hartford, Conn.* Three different cast iron gear housings are bored, faced, hollow-milled, drilled, and tapped on 6-station horizontal indexing drilling and boring machine. Five cam-feed drilling units and two leadscrew tapping units process parts. Horizontal units are provided with slide adjustment to handle LH parts. Production is 256 parts per hr (Apr 8, p176).

BORING MILL — *Giddings & Lewis Machine Tool Co, Fond du Lac, Wis.* Model 1210-FUAR floor-type horizontal boring, drilling, and milling machine has 10-in.-dia spindle and an 18-in.-square underarm support. Unit has spindle speed range of 1.56 to 400 rpm. Infinitely adjustable speed ranges of 0.002 to 0.5 ipm and 0.5 to 120 ipm are provided for feed and traverse to spindle and underarm. Milling feeds to column and headstock range from 0.5 to 120 ipm (May 6, p174).

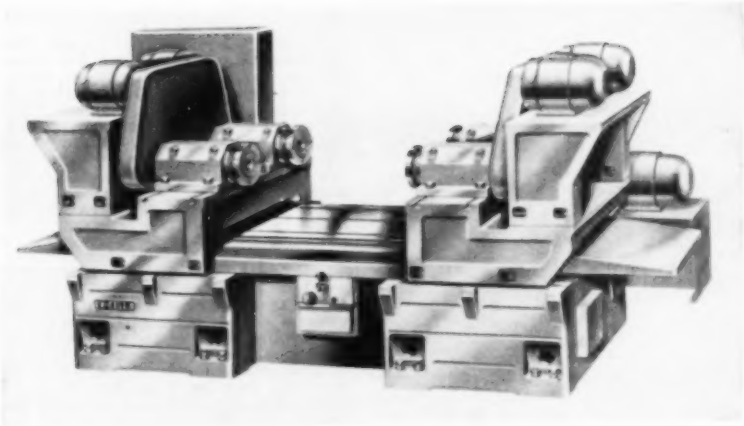
PRECISION BORER—*Greenlee Bros & Co, Rockford, Ill.* Hydro-Borer Model C-4 precision borer reportedly can achieve tolerances of ±0.0003 in. and finishes to 30 mu-in. Unit can be mounted on any type of base. Spindle diameter is $1\frac{1}{4}$ in. with No. 2 Morse taper. Feed is available in two ranges: 0.002 to 0.004 in. or 0.0035 to 0.007 in. (Apr 8, p176).

BORING MACHINE — *Imported by S & S Machinery Co, 140 53rd St, Brooklyn 22, NY.* Italian-made Supermill is multi-purpose unit that may be used for facing and boring simultaneously. Machine has 18 feeds and 16 speeds. Height from spindle to table is 31 in., cross travel of table is 40 in. Swingaway facing head has 11 power feeds from 0.001 to 0.165 ipr of head. Toolholder has travel of $7\frac{1}{4}$ in. (Jan 14, p163).

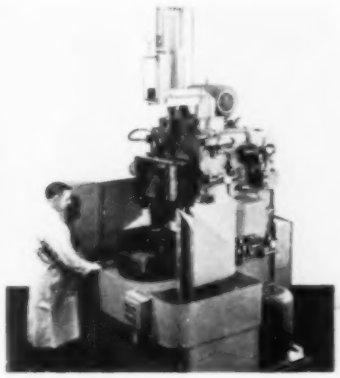
COORDINATE SETTING SYSTEM —*Imported by British Machines & Foundry Supplies, Ltd, Subsidiary of British Industries Corp, Port Washington, NY.* System incorporates projection screens which permit settings to be made within 0.00025 in. Optical screens are fitted to vertical adjustment of spindle shaft and boring stay, and to transverse movement of table of Kearns (British) Optimetric boring machine (Mar 11, p210).



BORING MILL—*Heald Machine Co, Worcester 6, Mass.* Model 0 Bore-Matic is capable of straight and taper boring, straight and taper turning, facing, chamfering, grooving diameters and faces, reaming—and, with special attachments, contour or spherical boring or turning and slot milling — singly or in any combination. Capacity from top of table to center line of spindle is 5 in. with the table and 4 in. with the cross-slide. Distance between heads on a two-head unit is 5 in.; maximum table travel is 9 in. Feed ranges from 0.5 to 50 ipm, and rapid traverse rate is 15 fpm (Apr 22, p181).



HORIZONTAL BORING MACHINES —*Ex-Cell-O-Corp, 1200 Oakman Blvd, Detroit 32, Mich.* Double-end model, Style 2440, has two bridges which support the spindles and their drive equipment. Bridges are 54 in. wide to allow for mounting a number of spindles. Max length of stroke of table is 40 in. Table fixture pad is 28 x 46 in. Single-end model, Style 1440, is supplied with only one bridge, mounted on left-hand end (Oct 7, p167).



VERTICAL BORING MACHINE — *Wadell Equipment Co, 159 Terminal Ave, Clark, NJ.* Automatic machine with positioning index table, permits high speed production of precision-bored parts. Boring, turning, chamfering, and other operations can be performed using multiple cutter heads. Vertical design affords full use of two spindles, thus providing two finished parts per cycle (Sep 9, p188).

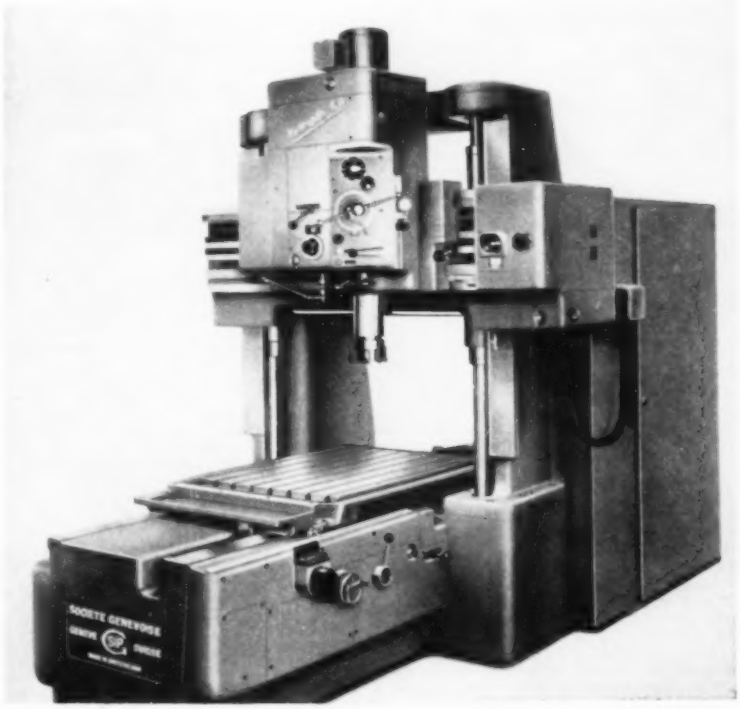
BORING HEAD—*Briney Mfg Co, P O Box 2208, Pontiac, Mich.* Boring head combining positive bore and depth control allows adjustment of boring tool to tolerance of 0.0001 in. without loosening or tightening any screws. Adjustment is made by turning the calibrated collars with a spanner wrench (Jul 1, p136).

BORING AND TURNING MILL—*Imported by Maserati Corp of America, 662 Main St, Westbury, Long Island, NY.* Morando Model VK20 (Italian) provides 16 spindle speeds in three ranges. Sliding head combinations that can be set up are turret and side head; ram and side head; two rams and one side head; ram, turret and side head; ram and turret head; two ram heads; and turret head. Max swing with side head is 83 in.; max turning height, 59 in. (Jun 17, p192).

BORING MILL—*Imported by S & S Machinery Co, 140 53rd St, Brooklyn 32, NY.* New 2-in. Supermill Model AL55 (Italian), featuring 12-speed spindle, can be used for boring, drilling, milling, and turning, and is capable of direct readings to 0.0001 in. It features built-in rotary table, 28 x 22 in., with 6 power feeds and rapid traverse in all directions. Table can be indexed every 90° by built-in stops (Jul 29, p150).

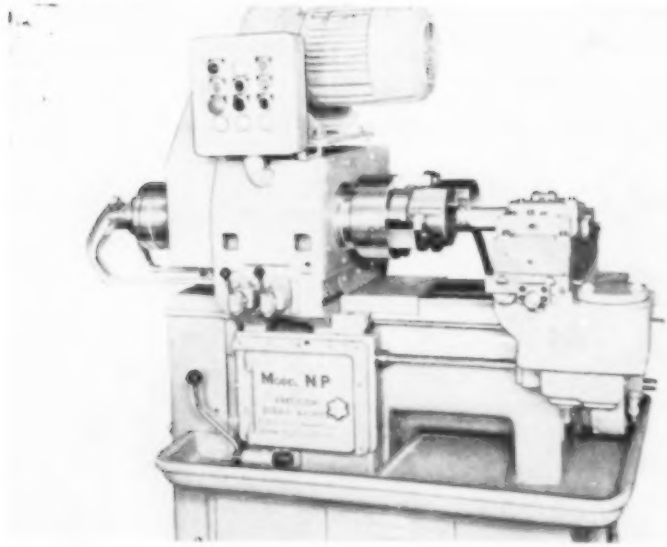
BORING MACHINE—*New Britain Machine Co, Hoern & Dilts Div, Saginaw, Mich.* BL-1 single-station machines perform contour turning, boring, and facing; straight boring; surface grinding; surface honing; ID and OD grinding; contour milling; straight or horizontal milling. Machines are available in single or double-spindle models and with single, multiple, or variable spindle speed drives (Jul 1, p135).

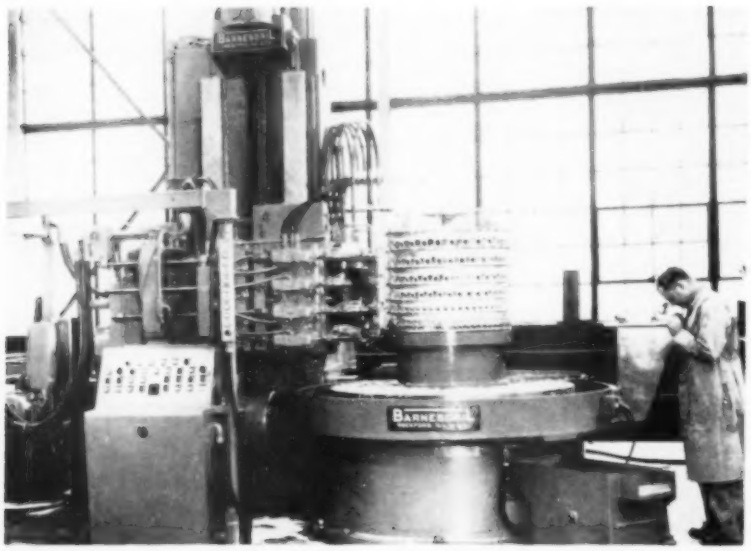
AUTOMOTIVE DIFFERENTIAL CASES — *Olofsson Corp, 2728 Lyons Ave, Lansing, Mich.* Two-station, double-end precision boring machine finish-bores two holes simultaneously in cast-iron cases at rate of 250 per hr. Holes are bored straight and round within 0.0005 in. Machine is designed for manual loading and unloading; entire operating cycle is pushbutton controlled (Jan 14, p172).



CENTER-LOCATING DEVICE—*Imported by Opto-Metric Tools, Inc, 137 Varick St, New York 13, NY.* Center-locating tool, designated Centricator, is used to true bores and external diameters in setting-up operations on jig borers, milling machines, lathes, and boring mills. Dial gage does not rotate. Slide in which contact tip pivots is adjustable between 5/64 and 11¾-in. ID and up to 11¾-in. OD (Aug 26, p160).

JIG BORER—*American SIP Corp, 100 E 42 St, New York 17, NY.* Swiss-made optical jig borer, Hydroptic-6A, has completely new spindle head with heavier quill and 8-hp spindle-drive motor, preselection of spindle speeds, and automatic tool clamping and releasing. Eighteen speeds from 40 to 200 rpm are available; spindle motor is equipped with automatic electric brake (Aug 26, p152).





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BORING MACHINE — *Barnes Drill Co, Rockford, Ill.* Designed to work on the periphery of cylindrically shaped parts with max diameters of 50 in. and max heights of 40 in., this numerically controlled boring, milling and drilling machine utilizes four spindles selected for four operations by punched tape. The 55-in. rotary table will index through 360° at a speed of approx 5/6 rpm. Machine will maintain an accuracy of 0.005 in. true position and repeatability of ± 0.001 in. (Dec 16, p165).

BORING HEAD—*Indiana Foundry, Machine & Supply, Inc, Brazil, Ind.* Type 126 2-spindle boring head has centers which are adjustable from 1 to 6 in. It will fit company's horizontal borers as well as replace all present adjustable heads. Another head features 3 spindles on exact 1-in. centers (Jul 1, p136).

BORING AND MILLING MACHINE — *Imported by Marac Machinery Corp, 45 S Broadway, Yonkers, NY.* Schwartzkopff KBF 2 (German) is adaptable to punchcard programming in which 28 coordinate settings may be stored and translated into machine movement in any desired sequence. Features include infinitely adjustable milling feed; 18 spindle speeds from 34 to 1817 rpm; 9 feed rates from 0.0012 to 0.0984 ipm (Apr 22, p188).

COMPRESSOR CRANKCASES — *Moline Tool Co, 102 20th St, Moline, Ill.* Two different-size crankcases are bored to receive cylinder sleeves on Model MR149 single-spindle boring machine. Operations include rough bore, counterbore top and bottom bores, and face bottom bores. When tools are withdrawn from one bore, crankcase is indexed to bring next hole into position (Apr 8, p188).

◀

BORING MACHINE — *Seneca Falls Machine Co, Seneca Falls, NY.* Model NP is available with either one or more precision spindles mounted independently on fixed bridge. Three different types of spindles are available—a low speed spindle for speeds up to 2500 rpm, a medium speed spindle for speeds up to 5000 rpm, and a high speed spindle for speeds up to 10,000 rpm. Boring feeds range from 0.0005 to 0.054 ipr (Dec 30, p126).

LIVE BUSHING — *Donley Products, Inc, 11106 Avon Ave, Cleveland 5, Ohio.* Live bushing for piloting applications on horizontal boring mills replaces bronze bushing in outer support, and increases accuracy by maintaining close fit of bushing and bar. Bushing can be adapted to receive removable slip bushings, keys or keyways (Mar 25, p206).

DIFFERENTIAL ASSEMBLIES — *Snyder Tool & Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Carriers and caps are rough bored, semi-finish bored, and tapped at rate of 180 pieces per hr on 7-station in-line transfer machine. Special bolt-loosening and tightening stations relieve machining stresses (Feb 25, p204).

BORING MACHINE — *Imported by Aaron Machinery Co, Inc, 45 Crosby St, New York 12, NY.* Larson boring machine (Swedish) is single-ended unit with variable-speed spindle. Dial indicator with accuracy of 0.001 in. assists in adjusting cutters (Feb 25, p206).

BORER—*Greenlee Bros & Co, Rockford, Ill.* Hydro-Borer, Model S-6, consists of cylinder housing and oil reservoir, bearings, boring spindle assembly. Dimensions are 29½ x 6¾ x 3¾ in. Rotation feeds oil to spindle. Rate of feed is variable in two ranges: from 0.002 to 0.004 in. and from 0.0035 to 0.007 in. (Jul 15, p182).

BORING AND MILLING MACHINE —*DeVlieg Machine Co, 450 Fair Ave, Ferndale, Mich.* Spiramatic Jigmil, Model 3B-72, has 36-in. vertical travel, 72-in. horizontal travel, and 72 x 30-in. table. Machine has spindle speeds from 25 to 1600 rpm, bar feeds ranging from 0.002 to 0.020 ipr, and a rapid-traverse bar feed rate (manual) of 90 ipm. Milling feed rates range from 0.5 to 36 ipm, with two rapid traverse rates, 50 and 150 ipm (Jun 17, p198).

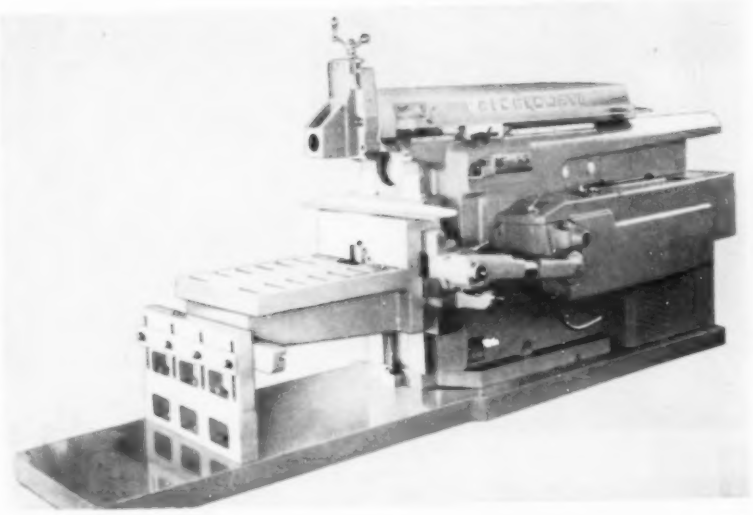
BORING MACHINE—*R K LeBlond Machine Tool Co, Cincinnati 8, Ohio.* LeBlond-Carlstedt Rapid Borer will solid bore, trepan or counterbore long holes 3 to 8 times faster than the conventional D-bit method. Unit has capacity for holes from 5/16 to 4¼-in. dia in a large range of work sizes. It is best suited to work that is, or can be made symmetrical for balance in rotation. Available in three sizes, No. 15, 30 and 60 (Dec 2, p154).

JIGBORER—*Distributed by Triplex Machine Tool Corp, 75 West St, New York 6, NY.* Matheys (Belgian) jigborer, Model 35-NC, has 33½ x 12-in. table which can be positioned in accordance with readings in 0.0001 in. by optical setting devices which scan precision scales located in saddle and knee. Spindle has infinitely adjustable speeds ranging from 96 to 1720 rpm (Sep 9, p204).

PLANING AND SHAPING

HYDRAULIC SLOTTER—*Rockford Machine Tool Co, Dept 201, Rockford, Ill.* 20-in. hydraulic slotter is capable of both conventional slotting and complicated tracing work. Equipped with Kopy-Kat duplicator, slotter will produce its own working templets. Machine has pendant-controlled cutting speed changes; hydraulic feeds and power rapid traverse in all directions; dividing head; and stroke length adjustment while the ram is in motion (Dec 2, p148).

SHAPER—*Jersey Mfg Co, 407 Livingston St, Elizabeth, NJ.* Jemco H-20 universal toolroom shaper machines surfaces or profiles. Shaping can be done with either draw or conventional cut. Working range is 8 x 11⅞ in. Stroke can be changed from 60 to 120 spm. Unit is equipped with dividing head, swivel vise, 12¼ x 12¼-in. table with locking jaws, two toolholding fixtures and swiveling work table (Jun 17, p184).



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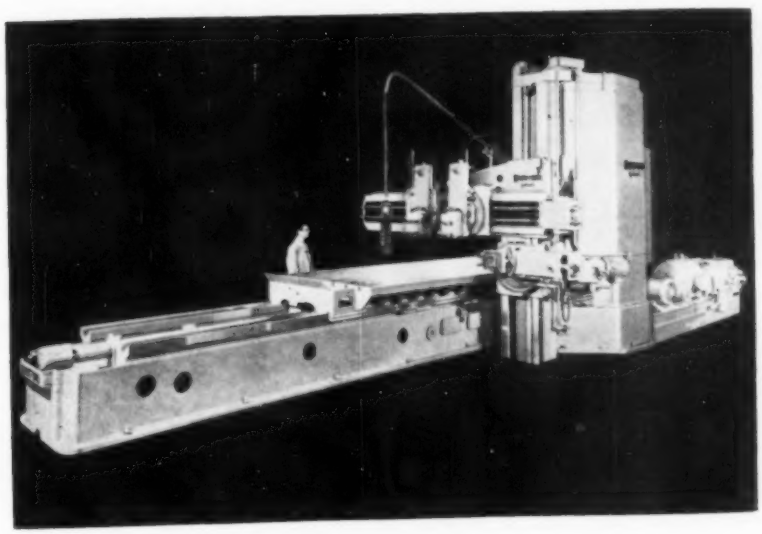
OPEN-SIDE PLANER—*Young Testing Machine Co, Young Machine Tool Div, Church Rd, Bridgeport, Penna.* Model 24 P has independent side head feeds, automatic cross-rail clamps, rapid traverse to all heads and slides, and force feed lubrication to the ways. Hydraulically driven by 15-hp motor, machine handles workpieces up to 36 in. high and 36 in. wide. All controls are from pendant. Stroke is 6 ft (Dec 16, p168).

VERTICAL SHAPER — *Imported by Austin Industrial Corp, 76 Mamaroneck Ave, White Plains, NY.* Chomienne 5-in. vertical shaper, product of France, provides 11½-in. longitudinal and transverse carriage movements, plus rotary movement through built-in 12½-in. rotary table. Lateral movements are obtained by leadscrews, with worm and worm-gear movement of rotary table. Ram stroke is adjustable up to 5 in. (Mar 25, p194).

HEAVY-DUTY SHAPER—*Cincinnati Shaper Co, Cincinnati 25, Ohio.* This 36-in. shaper is equipped for machining internal gate valve guides. Features include automatic power downfeed to the special ram head, special-clearance table to accommodate large castings, and extended steel base plate. Exclusive 50-psi automatic lubrication system maintains oil film at all important moving connections (Dec 2, p160).



KEYSEATER — *D C Morrison Co, Cincinnati 1, Ohio.* Keyseater cuts keyways from 1/16 to 1 in. Work is fed into cutting tool and the single cutter takes the cut the full length of work before backing out. Automatic feeds of 0.002, 0.004, 0.006 in. eliminate need for pushing a feed bar. On up stoke cutter is automatically relieved. Stroke is adjustable from 6 to 9 in. (Oct 21, p216).

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HYDRAULIC PLANER — *Rockford Machine Tool Co, Dept 201, Rockford, Ill.* Heavy-duty planer trademarked Hy-Draulic has power rapid traverse, power rail elevation, automatic power rail lock, and automatic way lubrication. Planer is available in 60 x 60-in. size and above, and may be had with single circuit or with company's "h3" triple circuit in which complete table and head control is obtained from pendant (Jul 29 p142).

American Machinist

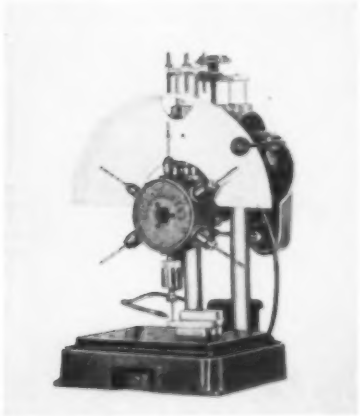
1958 DRILLING

PRODUCTION PREVIEW

◄ DRILLING MACHINE—*Barnes Drill Co, Rockford, Ill.* Punched tapes control all functions of numerically controlled, horizontal-spindle drilling, spotfacing, and chamfering machine. Machine is designed to machine radial holes in cylindrical parts up to 36-in. OD and up to 30 in. long supported vertically on automatically indexed 40-in.-OD rotary table. Spindle is mounted in vertically adjustable housing which, under control of punched tape, can be moved over max distance of 30 in. Numerical positioning control was developed by General Electric Co. (May 6, p172).

ENGINE FUEL CONTROL HOUSINGS—*Hartford Special Machine Co, Hartford, Conn.* Units are drilled on automatic multiple drilling machines at Hamilton Standard, Windsor Locks, Conn. Holes of varying size, angle and depth are drilled. Number of operations performed by each machine varies from five to 13. Machines eventually account for 112 operations (May 20, p204).

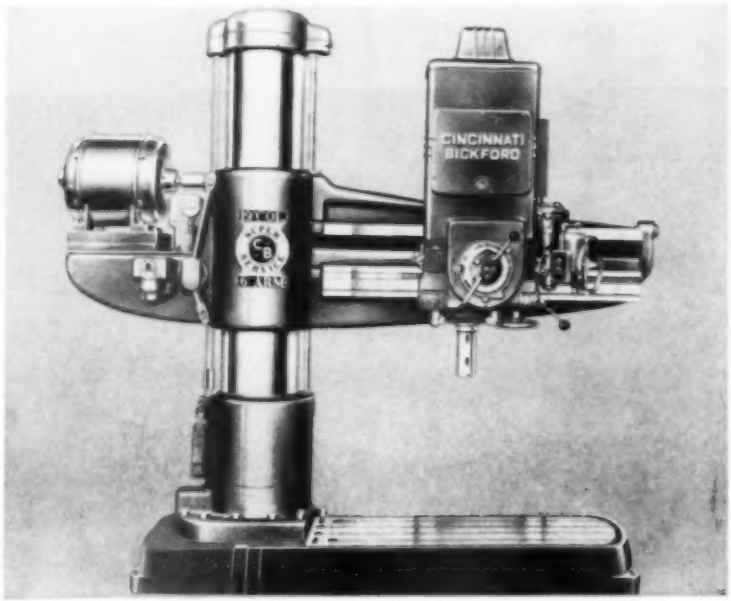
DRILLING MACHINE—*Edlund Machine Co, Cortland, NY.* Designed for highspeed, sensitive drilling of small parts and assemblies, this new Model 1F machine features 10-in. overhang, and is available in standard or special-purpose combinations and in models of from one to six spindles, with speed ranges from 625 to 10,000 rpm. Unit is available in bench and pedestal models (Sep 23, p198).



MACHINE BASES—*Inter-Lakes Engineering Co, 39200 Groesbeck Highway, Mt Clemens, Mich.* Standard machine bases, which come knocked-down, are made of steel plate ranging from 3/16 to 5/16 in. thick. Parts are so designed that any size of base from 24 to 48 in. long or wide and from 24 to 54 in. high may be quickly assembled; parts are drilled so that they may be bolted together for welding (Jul 29, p144).

TURRET DRILL—*Burgmaster Corp, Div of Burg Tool Mfg. Co, Gardena, Calif.* Bench-model turret drill features automatic indexing. It is 24 in. high, 17 in. wide and 20 in. deep. Two-step timing-belt drive provides speeds in two ranges: high, 650 to 6200 rpm; and low, 350 to 3300 rpm (Dec 30, p120).

► RADIAL DRILLS—*Giddings & Lewis Machine Tool Co, Cincinnati Bickford Div, Cincinnati, Ohio.* Super Service machines are available with three optional head designs: Standard Lever-Shift model with 36 manually controlled spindle speeds and 18 manual power feeds; Partial Pre-Select model featuring hydraulic control of all 36 spindle speeds and manual control of 18 power feeds; and Complete Pre-Select model with full hydraulic control of the 36 spindle speeds and 18 power feeds (Dec 2, p151).

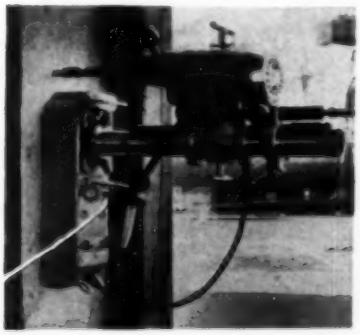


DOUBLE-END MACHINE—*Hartford Special Machinery Co, Hartford 12, Conn.* Designed to perform opposed operations simultaneously, this machine may be used with a small index table, manual or air-clamp fixtures, hopper or vibratory feeders, and is available with either manual or automatic interlocked cycle. Parts up to 28 in. long can be drilled, centered, spotfaced, chamfered, reamed, tapped, threaded, hollow milled or bored (Dec 16, p170).

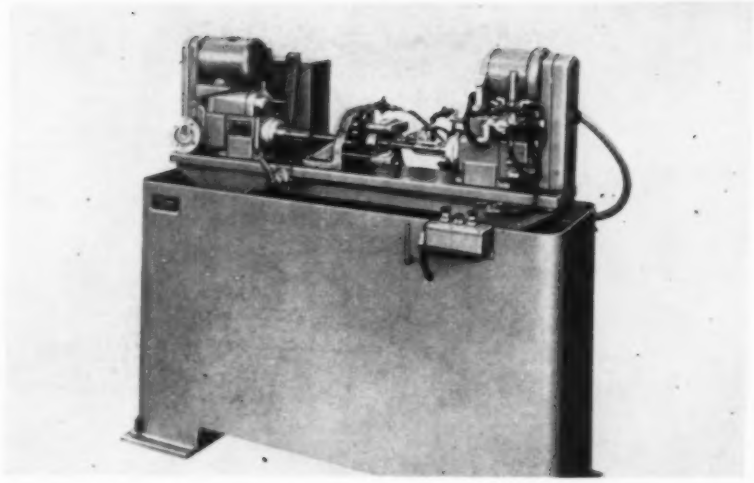
MULTI-SPINDLE HEAD — *ConRay Corp, Div of Continental Technical Service, Inc, 19 W Fourth St, Dayton, Ohio.* Multiple drillhead and an automatic index table are designed to solve close-center drilling problems. These units can produce any close-center hole pattern—linear, oval, circular, zig-zag, or more complex or irregular arrangements. Drillhead attaches easily to a drillpress spindle or other power unit. Either unit can be used separately (Nov 18, p194).

RADIAL DRILL — *Imported by Maserati Corp of America, 662 Main St, Westbury, Long Island, NY.* While Caser Model F25 (Italian) is running on one operation, speed for next can be pre-set on direct-reading dial; feed dial can be turned to new setting while tool is engaged. Unit has 2-ft 6-in. arm length, 8-in. column. Capacity is 1 in. in steel, 1⅜ in. in cast iron. Spindle has No. 3 Morse taper, 8 speeds from 205 to 2300 rpm, 3 feeds, 8-in. travel (Jun 17, p196).

CIRCULAR PARTS—*Morris Machine Tool Co, 933-16 Harriet St, Cincinnati 5, Ohio.* Machine drills 2, 5, or 6 equally spaced holes in circular part. Two Air-Oil-Matic drill units and air-operated indexing fixture are basic components. To drill two holes, index selector switch is set; part is loaded; cycle start is pressed and both units drill, then retract and stop cycle. Piece is indexed before cycle stops if 6 holes are desired; for 5 holes, left-hand unit is inoperative (Apr 8, p173).



MAGNETIC DRILLPRESS—*Black & Decker Mfg Co, Towson 4 Md.* Designed for continuous duty, 1¼-in.-capacity drillpress operates on ac or dc current without danger of overheating and consequent loss of magnetic holding power. Among the other features of the unit are a drill point locator for immediate, exact positioning; and remote-control hydraulic power feed. Base is detachable. Direct magnetic pull is 3500 lb. Length of drill stroke is 15 in. (Oct 12, p202).



DRILLING UNIT — *Model Machine Co, Inc, 4729 Hawthorne St, Philadelphia 24, Penna.* Lowcost pneumatic drilling unit uses a double-acting cylinder to provide reciprocating motion. The standard model has a ¼-in. stroke. A micrometer stop is incorporated to give positive depth control. Price is reported to be under $100 (Dec 16, p172).

MULTI-SPINDLE MACHINE — *Distributed by Aaron Machinery Co, Inc, 45 Crosby St, New York 12, NY.* Starrett (Italian) drilling and tapping machine has four normal and four rapid speeds, all with automatic feed. Spindles can be fixed in any position—in circles, straight line, or irregularly. Accuracy of reverse rotation allows tapping of dead holes to close tolerances (Sep 9, p198).

DRILLING HEAD — *Errington Mechanical Laboratory Inc, Staten Island 4, NY.* Unit furnished for up to No. 3 Morse taper sockets allows a max drilling pattern of 14 in. without extension spindles. Heads with a greater number of spindles and larger diameter capacities are available on special order. Case, cover frame and locator arm casting are made of aluminum. Drive gear has heavy-duty grooved ball thrust bearings (Nov 4, p188).

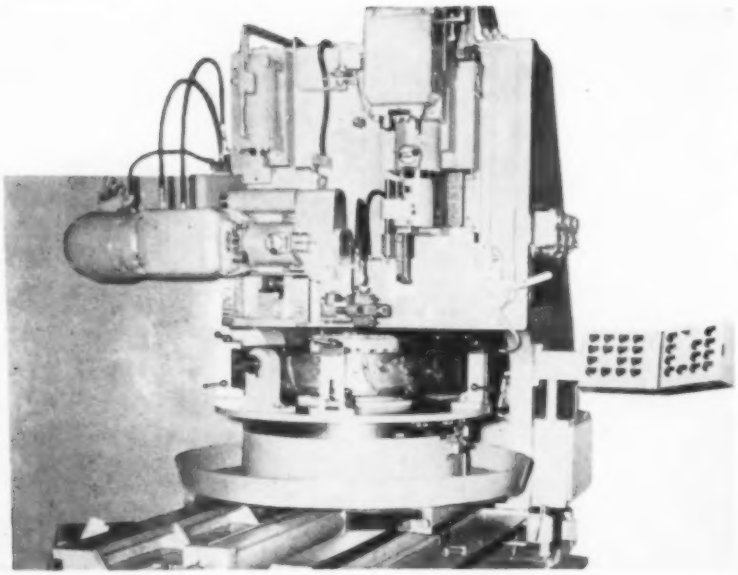
MULTI-SPINDLE HEAD—*Nicholson-Berger Co, Inc, 17755 Dora St, Melvindale, Mich.* Chain driven multiple-spindle drillhead operates off the head of any standard drillpress. The chain drive permits an almost unlimited variety of drill shapes and lengths. Ratio of spindle speeds can be changed by varying the sprocket sizes. Units are designed to customer's specifications (Nov 18, p208).

RADIAL DRILLS—*S & S Machinery Co, 140 53rd St, Brooklyn 32, NY.* Italian-made Speedmaster radial drills feature preselectors, electric push-button controls, and "feather-touch" handling. Line ranges in size from 3 ft x 11 in. up to 12 ft x 28 in. Also available is a new universal cylindrical grinder, the Elgin Model R-7. It is available in two capacities, 13 x 40 in. and 13 x 60 in. (Oct 21, p211).

HEADED PARTS—*Batchelder Engineering Co, Inc, 125 Main St, Springfield, Vt.* Long rivets and other parts are drilled and tapped on Model 408 Beco automatic machine. Equipped with long-shank hopper feeder, unit will accommodate shank lengths from ⅜ to 3¾ in. and shank dia from 0.090 to 0.375 in. Production rate is approx 30 pieces per min for steel parts drilled 7/16 in. deep; tapping production approx 45 pieces per min in steel (Apr 8, p171).

DRILLING MACHINES — *Buffalo Forge Co, 465 Broadway, Buffalo 4, NY.* New No. 15 drilling machines and tappers are more flexible and easier to operate. Machines have a capacity (in cast iron) of ½ in. when equipped with a 1/3-hp motor; ⅝ in. with a ½-hp motor. Line includes floor, bench, pedestal, and manufacturing-bench-type drilling machines and two tapping machines (Oct 21, p222).

DRILLPRESS—*Zagar Inc, 23886 Lakeland Blvd, Cleveland 23, Ohio.* Gearless drill head can be added to line of small drillpresses. Table carries indexing fixture so that 25 spindles will drill total of 50 holes, 25 in each pass. Travel of table, feed into drills, and return travel downward of table take place in automatic cycle. Hydraulic cylinder in base actuates table (Jun 17, p232).



AUTOMATIC INDEXING MACHINE —*Hoefer Mfg Co, Freeport, Ill.* Machine, built around two Hartford Special Machinery Co automatic drilling units, drills, spotfaces, reams, and hollow mills a group of bosses, two at a time, in horizontal plane. Operations are done in three passes, with tool changes after each pass (Aug 26, p160).

DRILLPRESS—*Lloyd Tool Corp, 1620 N Broadway, Burbank, Calif.* Model EPF sensitive drillpress is designed for production drilling of small holes in jig, fixture, and die work. When foot-pedal rheostat is used, spindle speed can be varied from 500 to 12,000 rpm while leaving both hands free. Maximum distance from chuck to table is 5 in.; quill travel is ⅞ in.; work table is 4½ in. square (Sep 9, p187).

RADIAL DRILL — *Veet Industries, East Detroit, Mich.* This new, improved, Veet 3-ft radial drill has sixteen spindle speeds. Capacity under the spindle is 36 in. in the standard model; a floor-level base model provides 52 in. under the spindle; a double-end base model provides 62 in. capacity. Price of the standard model is $3370 (Dec 16, p166).

ROTARY OIL-INDUCER—*Acromatic Tool Co, 21150 Coolidge Rd, Oak Park, Mich.* Heavy-duty unit assures constant flow of oil at drill cutting point. Device is adaptable to gun drills as well as oil-hole drills. Models 6000-6010 attach directly to vertical or horizontal drilling equipment. Model 5000 is high-speed, high-pressure unit for use with hollow shafts or spindles (Jun 17, p186).

DRILLING UNIT—*Bedford Gear and Machine Products, Inc, 550 Krick Rd, Bedford, Ohio.* Unit can be used for semi-automatic or fully automatic operations and is adaptable to multiple drilling and reaming. It can drill, ream, tap, counterbore, center and countersink. Unit is furnished with either a 2½ or 3½-in. stroke. Speeds range from 245 to 8640 rpm; hp from ¼ to 7½ (Dec 2, p152).

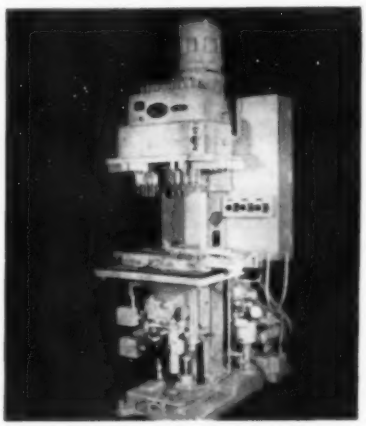
DRILLPRESS CLAMP — *Termite Drills, Inc, 99 N Lotus Ave, Pasadena, Calif.* Sta-Put clamp has a split collar and attaches to drillpress column. It can be adjusted to hold almost any shaped workpiece. Pressure fork which holds object in place may be extended 1 in. from minimum setting. Slight turn of adjusting knob lowers fork to proper tension (Jul 29, p152).

DRILLING MACHINE — *Distributed by Index Machine Co, 543 N Mechanic St, Jackson, Mich.* Adams upright drilling machine has eight standard speeds, ranging from 50 to 950 rpm (other speeds available); and eight feeds, ranging from 0.002 to 0.021 ipr. Spindle travel is 10 in.; head travel, 10 in.; table travel, 18 in. (Sep 9, p204).

RECIPROCATING CONVERTOR — *Hunter Tools, Box 564, Whittier, Calif.* Device converts any drillpress using a chuck taper spindle into all-purpose machine. Model RC comes in 1-in. and 1¾-in. stroke types, and can be used for any operation requiring accuracy in vertical sawing, filing or slotting (Mar 11, p182).

RADIAL DRILLING MACHINE — *Distributed by Barer Engineering & Machinery Co Ltd, Champlain, NY.* Essbeco RD 25 radial drilling machine (made in Sweden) is designed for toolroom or repair shop work—wherever the type of work changes frequently. There are 8 spindle speeds, ranging from 100 to 1280 rpm. Table is 19¾ in. in diameter. Max distance from column to center of spindle is 27⅜ in.; min distance, 9¼ in. (Nov 4, p192).

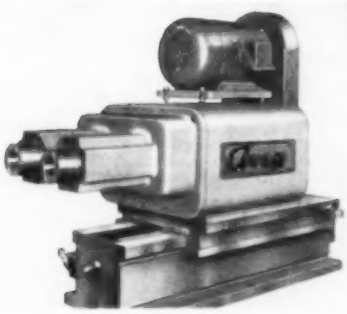
RADIAL DRILLPRESS — *Walker-Turner Div, Rockwell Mfg Co, 400 N Lexington Ave, Pittsburgh 8, Penna.* Drillpress is available in 24 models with either 4¼- or 6-in. spindle travel and standard 30-in. or long 42-in. column length. Head moves in and out through 18-in. travel radius on traveling ram. Head, ram, and cradle swivel 360° around column. 15 power speeds range from 160 to 8300 rpm (Apr 8, p172).



DRILLING AND TAPPING MACHINE—*National Automatic Tool Co, Inc, Richmond, Ind.* Model H-6 is available with preset selective cycle control and straight-line indexing slide. Over 100 combinations of operations are possible; functions include drill, tap, step drill, chamfer, countersink, counterbore, spotface, and skip (Aug 12, p164).

DRILLING UNIT—*George L Day Co, 1227-31 Niagara St, Buffalo 13, NY.* Robotorq line of self-contained units for drilling, boring, tapping, counterboring and step-drilling can be mounted in any position to suit production requirements. Long stroke, from 6 in. up, permits use on wide range of work including deep boring; high torque, from 35 to 4000 ft-lb, permits taper tapping and other heavy-duty operations (Jul 1, p188).

MULTI-SPINDLE HEAD — *Commander Manufacturing Co, 4225 W Kinzie St, Chicago, Ill.* Model 400 is designed for applications where up to four holes are to be drilled or tapped at one time. Capacity is ¼ in. in steel. Spindles are driven by gear drive. Each rotates from a fixed position and is adjustable to reach 3¾-in.-max bolt circle. Minimum center distances vary from ⅞ in. for the two-spindle unit to 1 in. for the three and four-spindle units (Dec 16, p182).



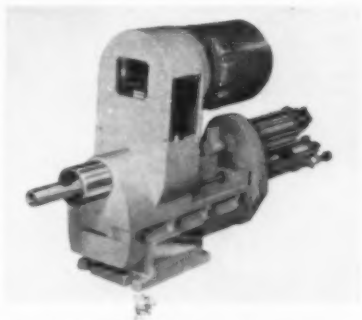
DEEP DRILLING ATTACHMENT — *Motch & Merryweather Machinery Co, Avey Div, Cincinnati 1, Ohio.* Metric Torque-Matic is said to eliminate drill breakage during deep hole drilling. Unit allows exact setting of torque on Avey deep hole drilling units. If torque is exceeded, drill is automatically withdrawn (Jul 29, p141).

ADJUSTABLE DRILLING JIGS — *Distributed by Wharton and Wilcocks of America, Inc, 17 Battery Pl, New York 4, NY.* Jable (British) adjustable drilling jig system eliminates need for individual jigs in drilling holes to close limits in flats, profiled shapes, and angles. This is accomplished by clamping bushings to templet, drilling holes 3/16-in. dia, and then opening out to required size. Jig permits up to 9 holes to be drilled at one setting (Jul 29, p146).

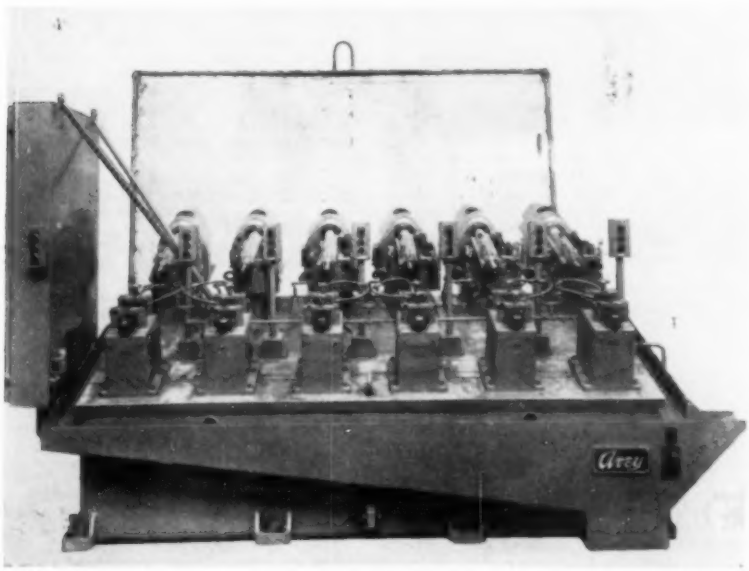
AUTOMOTIVE PAWLS — *Colonial Broach & Machine Co, P O Box 37, Harper Station, Detroit 13, Mich.* Pawls are machined on 6-station drilling and broaching machine which loads two parts, drills 4 holes halfway, drills through, chamfers both sides of holes, reams, broaches four surfaces on both parts in one pass, and unloads. 304 pieces per hr are produced at 80% efficiency (Apr 22, p190).

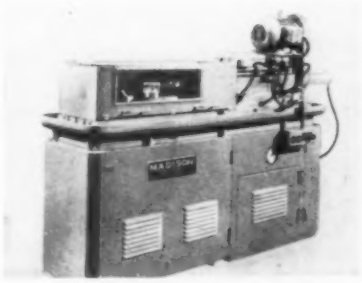
RADIAL MACHINE BASE — *Hause Engineering, 809 S Pleasant St, Montpelier, Ohio.* Model M60C, designed to simplify building of automation-type special machines for drilling and tapping operations with company's Holomatic units, has 64-in.-dia cast-iron top with 56-in.-dia work surface. Two circumferential T-slots provide easy location adjustment of machining units (Jun 3, p128).

DRILLING MACHINE — *Walter P Hill, 22183 Telegraph Rd, Detroit 19, Mich.* Opposed-spindle drilling machine features automatic system for positioning heads and table to produce hole patterns in all types of heat transfer equipment. Machine handles sheets and baffles up to 6-ft dia and 10 in. thick, and produces holes at feed rates up to 18 ipm with conventional oil-flute drills. Spindle travel is 12 in.; feeds are adjustable up to 24 ipm (Sep 23, p188).



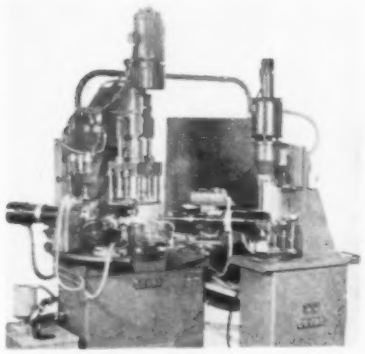
AUTOMATIC DRILLING UNIT — *Gotha, Inc, PO Box 430, Harvey, Ill.* Air-hydraulic unit is capable of a complete machining cycle—drill, ream, counterbore, spotface and tap. Rapid approach, feed and return are infinitely adjustable. Spindle speeds range from 300 to 3600 rpm. Capacity is 1/8 to 9/16-in. drill in mild steel (Dec 30, p122).





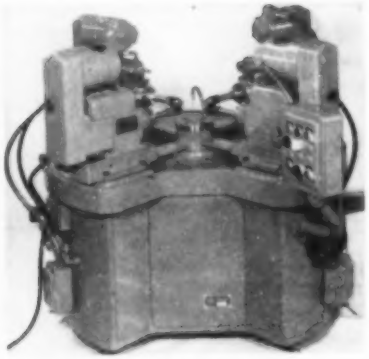
DRILLING MACHINE—*Madison Industries, Muskegon, Mich.* Machine features spindle speeds up to 8000 rpm with feeds from 0 to 40 ipm. It will accommodate gun-type drills up to 1-in. dia. Workpiece is held stationary; spindle of self-contained power unit rotates. It has air-powered oil-controlled feed with either 6- or 9-in. stroke. Base contains high-pressure coolant system (Jul 29, p154).

FLOATING PLATE—*Centerline Engineering Co, 90 Crest St, Wethersfield, Conn.* Major application is for moving heavy drill jig from spindle to spindle on table of multiple-spindle drillpress. Air from shop line flows through passages within plate and out through connecting ports in bottom, exerting lifting force against drillpress table. Six plates, ranging from 9 x 12 in. to 15 x 24 in. in size, are available (Jan 14, p164).



DRILLING AND TAPPING MACHINE—*Govro-Nelson Co, 1935 Antoinette, Detroit 8, Mich.* Machine incorporates two vertical and five horizontal units for drilling and tapping 12 holes in three similar parts. Operator loads two machines, completing drilling operations on manually clamped fixture, and tapping ten holes simultaneously on second machine, which automatically clamps, taps, and releases part (Sep 9, p188).

DIESEL CONNECTING RODS—*Avey Drilling Machine Co, Cincinnati 1, Ohio.* Rods are drilled on 6-spindle Aveydraulic machine which has 12-in. ram travel, rapid traverse feed and rapid return, and hydraulic feeds. Metric Torque-matic provides automatic, calibrated torque to prevent drill breakage. Control device withdraws drill for chip clearance whenever it becomes loaded (Jun 17, p200).



CROSS-DRILLING MACHINE—*Russell T Gilman, Inc, Grafton, Wis.* Automatic machine can perform varied multiple operations using four horizontally-mounted drill heads, located on a common plane and pivoting around the axis of the workpiece through an arc of 270°. Feed movements are hydraulically powered (Mar 25, p192).

HEAVY-DUTY DRILL UNIT — *Bellows Co, Akron, Ohio.* Carbi-Drill is complete production unit for high-speed drilling, reaming, counterboring, precision boring, and spotfacing. Thirty-five spindle speeds from 600 to 6000 rpm are available by changing timing belt and motor pulley. Drilling capacity is up to $^{5}/_{8}$-in.-dia drill in mild steel (Jul 29, p148).

MULTI-SPINDLE DRILLING MACHINE—*ABM Machinery Corp, 29 Elm Ave, Mt Vernon, NY.* Machine comes in five models with working lengths of 4, 8, 12, 16, or 20 ft, making it possible to drill a varied pattern of holes from ½ in. to 20 ft apart. Basic 4-ft model has four adjustable heads with speeds of 900 to 3600 rpm (Jun 3, p152).

MULTI-SPINDLE HEAD—*Ettco Tool & Machine Co, 594 Johnson Ave, Brooklyn 37, NY.* Both models of this universal ball-joint adjustable-spindle multiple head feature a circle-type spindle arrangement, one with 6 spindles (Model 600) and one with 8 (Model 800). Spindles can be added to or removed from gear case. They can be located anywhere within a 3-in. dia with a 15/16-in.-min center distance (Oct 7, p167).

LARGE BOLT CIRCLES—*Moline Tool Co, Moline, Ill.* Bolt circles from 12 to 100 in. in dia are drilled by Model HD68 automatic machine. Each of two spindle heads has capacity for 2½-in.-dia drill, and has 2-speed adjustment. Hydraulic-powered rotating table provides automatic indexing for 30 different totals of holes on bolt circle (Jun 3, p158).

DRILLING ATTACHMENT — *Jersey Mfg Co, 407 Livingston St, Elizabeth, NJ.* Drill-Tru attachment for turret drilling will drill deep holes of 0.004 to 0.1969 in. in diameter. Precision collets are used instead of bushings to hold drill. Adaptable to all standard drives, attachment is available for B & S No. 00, 0, and 2 automatic screw machines using turret driving attachments (May 6, p208).

DRILLING UNIT—*W K Millholland Machinery Co, 6402 Westfield Blvd, Indianapolis 20, Ind.* No. 4000 Series cam-feed drilling unit can be used with single tool in spindle or multiple head may be attached to spindle carrier. Specifications: motor horsepower, ¾ to 5; max thrust, 1800 lb; max length of stroke, 6 in.; spindle speeds, 95 to 4000 rpm; capacity in steel, 1½ in. (Jan 14, p163).

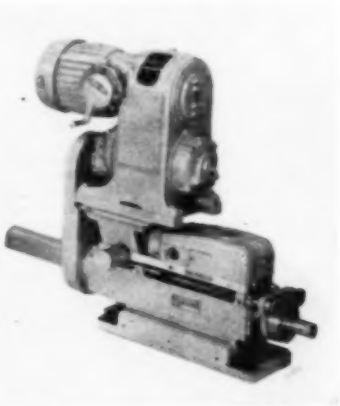
ALUMINUM PISTONS — *Motch & Merryweather Machinery Co, Avey Div, Cincinnati 1, Ohio.* Pistons are processed on this machine consisting of nine No. 1 Avey automatic cam feed drilling units and one indexing table. Nine holes are drilled at one time; table indexes 15° and seven more holes are drilled. Table then indexes 180° and operations are repeated on opposite side of piston. Drilling and indexing operations are automatic. Production is 85 parts per hr (Dec 16, p172).

CHUCK KEY RETRIEVER—*Toolcraft Products Co, PO Box 92, South Pasadena, Calif.* Key-Matic is a keychain-recoil device which attaches to any standard drillpress or lathe. Requiring but a few moments to attach, unit is an added safety factor in reducing chance of key being left in chuck. Special chuck-key holder and mounting brackets are included (Dec 2, p174).

DRILLPRESS—*Electro-Mechano Co, 261 E Erie St, Milwaukee, Wis.* 16-in. drillpress is available as either floor- or bench-type machine. Speeds are infinitely adjustable over the range from 150 to 4000 rpm without use of special attachments. Drilling capacity is from 1/16 to $^{5}/_{8}$ in. Quill stroke is 4 in. Speed selector dial is located at front of machine. Floor model stands 66 in. high (Dec 30, p133).

DRILLING AND TAPPING MACHINE — *Cleereman Machine Tool Corp., 555 W Washington Blvd, Chicago 6, Ill.* Completely new Model N 21-in.-swing upright drilling and tapping machine is available in box-and round-column types in both single-spindle and gang-drill models. A unique design feature not only permits unlimited feed rates, but also provides all standard geared tap leads from 8 to 50 pitch (Oct 21, p214).

REAMER DRIVER — *Greaves Machine Tool Co, Eastern Ave, Cincinnati 2, Ohio.* Bench-mounted reamer driver, with capacity for reamers of ¼ to 1½-in. dia, has four speeds—20, 32, 56, and 85 rpm—with higher speed ranges available on special order. Foot switch operation leaves operator's hands free to guide work. Unit has 4-jaw universal chuck; 3-jaw chuck available as optional equipment (Oct. 7, p167).



DRILL UNITS—*Morris Machine Tool Co, 933-16 Harriet St, Cincinnati 3, Ohio.* Air-Oil-Matic drill units, adapted to automatic gun drilling, have high-pressure coolant forced through drill to contact work at cutting head. Spindle speeds up to 8000 rpm can be obtained by adjusting handwheel; feeds up to 40 ipm are possible, with infinitely adjustable feed stroke available in 6- or 9-in.-stroke models (Apr 22, p188).

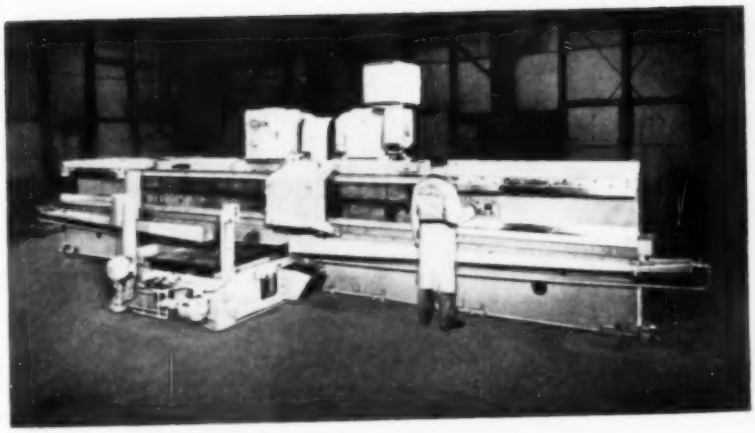
RADIAL DRILL—*Zagar, Inc, Lakeland Blvd, Cleveland 23, Ohio.* Machine drills 68-hole circular pattern in cast-iron gas burners. Operator loads part in air-actuated clamp on index table. Drillhead is fed automatically. 34 holes are drilled at one time (Mar 25, p222).

UTILITY TRAY—*Patton Mfg Co, Inc, Small Products Div, 1802 W Pleasant St, Springfield, Ohio.* Model T-10 is designed to hold drills, wrenches and other items frequently used with drillpress. Trays can also hold machined parts during production runs. Trays fit all standard 2, 2¾, and 3½-in. drillpress columns (Apr 22, p190).

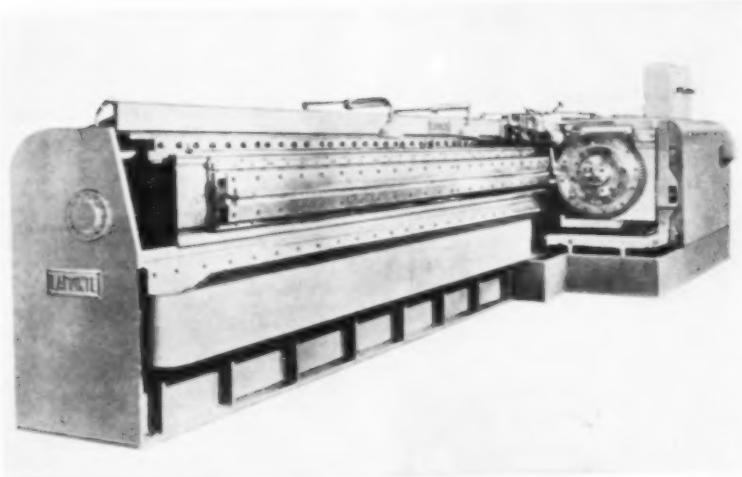
DRILLPRESSES — *Secrest Machine Co, 1507 M St, NW, Washington 5, DC.* Line of high-speed, automatic cycling drillpresses features infinitely adjustable speeds, feed range, stroke, feed stroke and rapid approach. Machines are available in single or multiple-spindle models. The variable speed drive provides spindle speeds up to maximum of 8000 rpm on the standard machines (Dec 30, p134).

TOOL TRAY — *South Bend Lathe Works, South Bend 22, Ind.* Tray, designed for company's 14-in. Precision Model drillpresses, is made of aluminum and clamps around the 2¾-in. column. It is adjustable to any height or position either above or below drillpress table. Price is about $6 (Sep 9, p219).

BROADCHING



HORIZONTAL SURFACE BROACHING MACHINES—*Colonial Broach & Machine Co, Box 37, Harper Station, Detroit 13, Mich.* Machines are offered in several models; 240-in.-stroke units come in 15 and 25-ton capacities, with 18- or 24-in. ram-face width and with box or V-type ways. Similar models are also offered with 180-in. strokes. Broaching speeds range from up to 300 fpm (Feb 11, p166).



TURBINE WHEELS—*Lapointe Machine Tool Co, Hudson, Mass.* Gas turbine wheels for General Electric's 16,500-kw gas turbine engine are broached on 50-ft, 240-in. stroke, horizontal broaching machine. It broaches slot 1.6 in. deep and up to 5-in. rim thickness, removing 150 lb of metal per wheel. Index is held to 0.0002 in. of true position, and the broached form is held to a tolerance of 0.0003 in. (Mar 11, p175).

HYDRAULIC MOTOR DRIVE — *Colonial Broach & Machine Co, Box 37, Harper Station, Detroit 13, Mich.* Drive for main drive gear of company's high-speed vertical and horizontal mechanical-type broaching machines (up to 10-ton capacity) features economy, simplicity, and smoothness of operation. Machines so equipped are marketed under name Hydro-Gear (Aug 26, p168).

ENGINE CYLINDER BLOCKS—*Colonial Broach & Machine Co, PO Box 37, Detroit 13, Mich.* Blocks are broached in tunnel-type broaching machine. Parts are automatically fed to machine through turnover positioning unit for one-pass overhead broaching by hydraulic traveling ram which removes 0.025 in. of stock. Cutting speed is 30 fpm (Jun 17, p196).

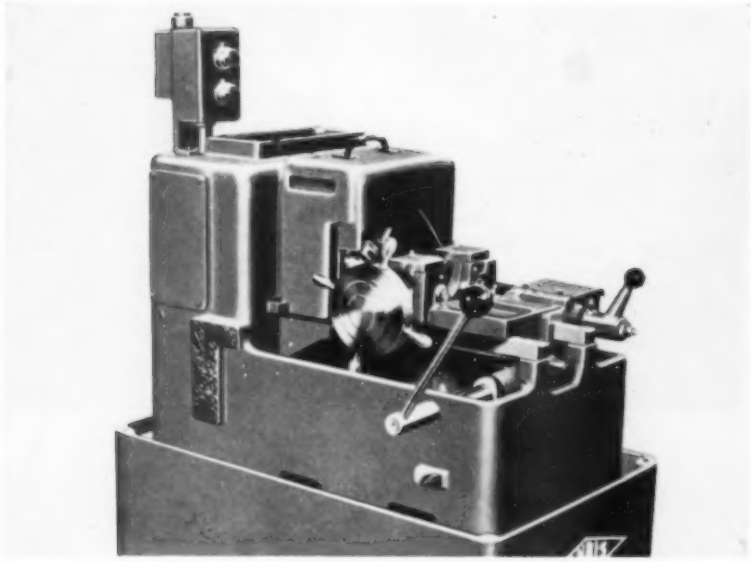
WINDSHIELD-WIPER BRACKETS —*National Broach & Machine Co, 5600 St Jean, Detroit 13, Mich.* Parts are machined on automatic broaching fixture, which broaches round hole in each of two $\frac{3}{8}$-in. dia, 1-in.-long bushings that are pressed into brackets. Air-hydraulic cylinder pulls broach through part. Unit has 25-in. stroke, max pull force of 1450 lb, and broach speed of 70 fpm (Feb 25, p196).

American Machinist

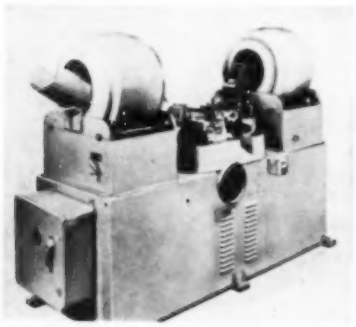
1958

PRODUCTION PREVIEW

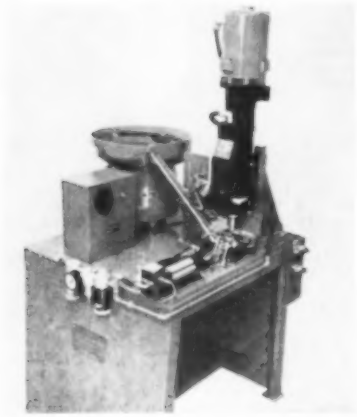
TAPPING AND THREADING



THREADING MACHINE—*Landis Machine Co, Waynesboro, Penna.* Model 5C Landmaco, designed for precision threading of small-dia workpieces, will produce threads to Class 3 and 4 tolerances on production basis and has range from No. 4 to ⅝ in. Eight spindle speeds, ranging from 150 to 1000 rpm, are provided by geared headstock and V-belt-pulley drive. Carriage has nominal 4½-in. travel. (Jun 17, p190).

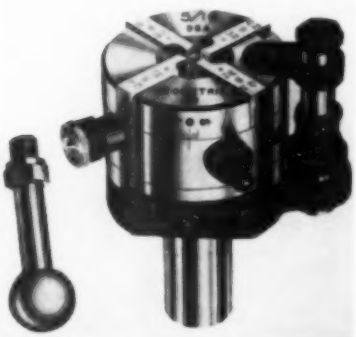


THREAD ROLLING MACHINE — *Prutton Corp, 5295 W 130 St, Cleveland 30, Ohio.* Model 125A thread rolling machine has several new features including cradled hopper, rear end loading and new feed track assembly with micrometer-type positioning adjustments. Production rates range from 600 to 800 pieces per min. Also available is the Model 300, specially designed for thread rolling on hollow parts (Oct 21, p204).



TAPPING MACHINE — *Automation Development Corp, 135 Reynolds Rd, Mentor, Ohio.* Automatic tapping machine for small parts has production capacity of 1500 pieces per hr. Unit consists of vertical tapping unit, vibratory feeder, gravity track, escapement, work feeder, and ejector mechanism (Apr 8, p199).

LEADSCREW TAPPING UNIT — *Thriftmaster Products Corp, 1016A N Plum St, Lancaster, Penna.* Multiple leadscrew tapping of several parts with similar but varied hole patterns can be done with adjustable multiple-spindle head. Normal spindle travel of 1½ in. is controlled by rotary limit switch operated through special shaft in head (May 6, p176).



DIE HEAD—*Geometric Tool Co Div, Greenfield Tap & Die Corp, New Haven 15, Conn.* Designed for use on small screw machines, model DSA die head with aligning shank is equipped with both an outside trip for short-length, fine-pitch shoulder threading and a pulloff trip for longer threads, providing ample chaser engagement for tripping (Mar 25, p194).

LEADSCREW TAPPER—*Jarvis Corp, Middletown, Conn.* One leadscrew is used to cut all listed pitches on leadscrew tapper. Model AP-9100 allows conversion from 11-pitch to 12, 13, 14, 16, 18, 20, 24, and 28-pitch in a matter of seconds; Model AP-9000 converts from 24-pitch threads to 28, 32, 36, 40, 44, 48, 56, 64, 72, and 80-pitch with equal speed (Feb 11, p158).

HOMING DEVICE—*Hamilton Tool Co, 9th St at Hanover, Hamilton, Ohio.* Device added to Hamilton small-hole precision tapping machine returns spindle to neutral position instantly and automatically when pressure on feed lever is released. This stops rotation of tap and permits gentle withdrawal through reverse pressure on feed lever (Mar 25, p214).

DIE HEAD—*Greenfield Tap and Die Corp, Geometric Tool Co Div, New Haven 15, Conn.* Die head, incorporating features of new DSA die head (AM—Mar 25 '57, p194), was designed specifically for No. 4 Brown & Sharpe automatic, and will take full capacity of the machine (Jun 17, p222).

MAGNETO STATORS—*Ettco Tool & Machine Co, Inc, 594 Johnson Ave, Brooklyn 37, NY.* Stators are drilled and tapped on 4-way machine at rate of 400 per hr. Machine consists basically of vertical drill units, leadscrew tapper, horizontal drill unit, and an 8-station index table (Feb 11, p170).

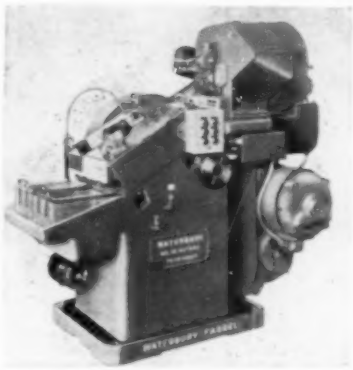
TAPPING AND DRILLING MACHINE—*Boice-Crane Co, 935 W Central Ave, Toledo 6, Ohio.* Combination tapping-drilling machine, which will perform single or multiple-spindle operations, is air-controlled for up to 50 semi-automatic or automatic cycles per min. Tool capacities in mild steel: tapping—four ⅜ in., six or more 10-32, or single ⅝ in.; drilling—four 5/16 in., six or more 3/16 in., or single ⅝ in. (Jun 17, p188).

DIE HEADS—*Greenfield Tap & Die Corp, Geometric Tool Co Div, New Haven 15, Conn.* DD Series, for hand machines, are available with aligning shanks having the same features as the DS and DSA die heads (AM—Mar 25 '57, p194). Feature provides for properly aligning the die head with the work to be threaded. Heads can be supplied with flanged or straight shank (Jul 1, p163).

TAP DISINTEGRATOR—*Jiffy Disintegrator Inc, 1503 E 11 Mile Rd, Royal Oak, Mich.* Model C-1 disintegrating machine, designed for efficient removal of broken drills, taps, reamers and stubs, is mounted on a movable steel cabinet. The Meehanite T-slot work table measures 25 x 30 in. and is slotted for ½-in. bolts. Gravity automatic feed incorporates depth control (Nov 18, p190).

COUPLING TAPPER — *Landis Machine Co, Waynesboro, Penna.* No. 48T coupling-tapping machine, designed for internal threading of oil tubular goods ranging from 1¼-in.-OD upset tubing to 6-in.-OD casing, is pneumatically operated and electrically controlled. It features automatic operation with magazine feed. Production rates range from 96 per hr on 1½-in. pipe couplings to 17 per hr for 5½-in. casing couplings (Jan 14, p160).

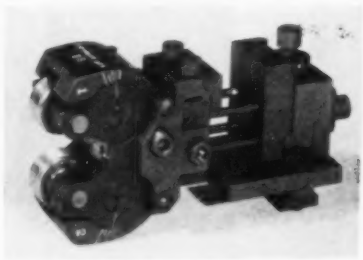
PNEUMATIC TAPPING HEAD — *Commander Mfg Co, 4225 W Kinzie St, Chicago, Ill.* Pneu-matic Tapper is air-actuated tapping head with adjustable torque control, which can be mounted on any drillpress. Adjustable rate of spindle approach and tapping depth insures fast, accurate tapping. Tool handles taps between No. 0 and ¾-16. It operates on shop air pressure and 115v ac (Apr 22, p183).



ROTARY DIE THREADER—*Waterbury Farrel Foundry & Machine Co, Waterbury, Conn.* Machine, utilizing a circular die and die segment, can thread all types of machine screws as well as other headed parts. Unit handles blanks from ¼ to 2 in. long and thread diameters from No. 6 to ¼ in. Production rates on blanks of conventional screw materials range from 200 to 600 per min. (Aug 12, p120).

DIE HEADS — *Landis Machine Co, Waynesboro, Penna.* New 3-in. and 4-in. Type A Landmatic die heads are designed to replace the former Type Z heads now in use on turret lathes and other machines using stationary-type heads. Standard ranges of the Type A heads are: ¾ to 3-in. pipe, for the 3-in. model; and for the 4-in. model, 1 to 4-in. pipe (Nov 18, p196).

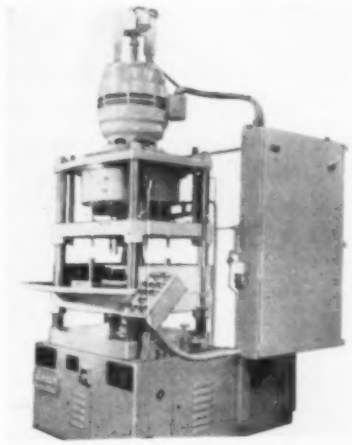
THREADING MACHINE—*Ridge Tool Co, Elyria, Ohio.* Ridgid 535 pipe and bolt threading machine has universal die head which, with its two sets of dies, threads ⅛ to 2-in. pipe or conduit. Priced at $460, the complete package also includes a roll-type cut-off with self-centering full-floating cutter wheel, and a 5-flute cone reamer with ⅛ to 2-in. capacity (Jul 1, p152).



THREAD ROLLING ATTACHMENT —*Reed Rolled Thread Die Co, Worcester 1, Mass.* Model B8 thread rolling attachment is designed for use on the 7/16-in. Model TK Cone and similar size automatics, where the larger size Series B attachments are not applicable. Device is a floating-straddle type, two-roll attachment. Two opposed rolls pass over the work for a recommended number of revolutions to form the thread (Nov 18, p191).

DISINTEGRATING MACHINE — *Jiffy Disintegrators, Inc, 1503 East 11 Mile Rd, Royal Oak, Mich.* Model J-1 chucks into any drillpress and requires only connections to a water line and 115-v outlet. Unit is 8 in. long and 5 in. in dia, sells for $249, and is said to be capable of burning out broken taps and drills as fast as many higher-priced machines (Jul 1, p144).

TAPPING ATTACHMENT—*Tapmatic Corp, 845 W 16 St, Costa Mesa, Calif.* Model 100 Tapmatic weighs only 10 oz, has a max dia of 1⅝ in. and a max length of 3½ in. Rated capacity for tapping in steel is from No. 00 to No. 6. Clutch stops the tap instantly when the tap becomes dull, loaded, hits a hard spot, or bottoms in blind hole (Nov 18, p204).

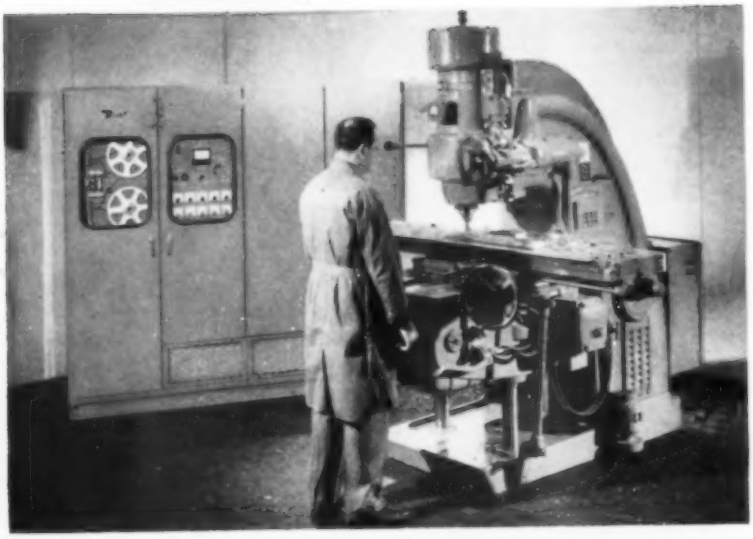


TAPPING AND DRILLING MACHINE—*Zagar, Inc, 23886 Lakeland Blvd, Cleveland 23, Ohio.* Machine combines tapping with drilling and reaming in machine designed originally for latter operations only. Drill head and fixtures are removed to take leadscrew tapping head. Holes as close as sum of the hole diameters can be drilled and tapped. Machine is standardized in 22-in. size (Jun 17, p218).

American Machinist

1958 MILLING

PRODUCTION PREVIEW

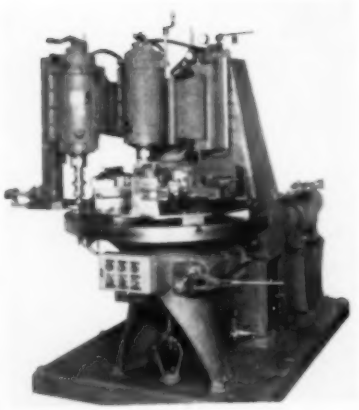


NUMERICALLY CONTROLLED MILLERS—*Kearney & Trecker Corp. Milwaukee 14, Wis.* Three standard knee-type vertical milling machines. Models 2CH, 315TF and 415TF (illustrated), are now available with numerical control. These "KTNC" machines offer 3-D tape controlled milling for shops that handle small to medium size workpieces. Three control systems are available—Bendix, GE and the Digimatic systems made by Electronic Control Systems Inc (Dec 30, p120).

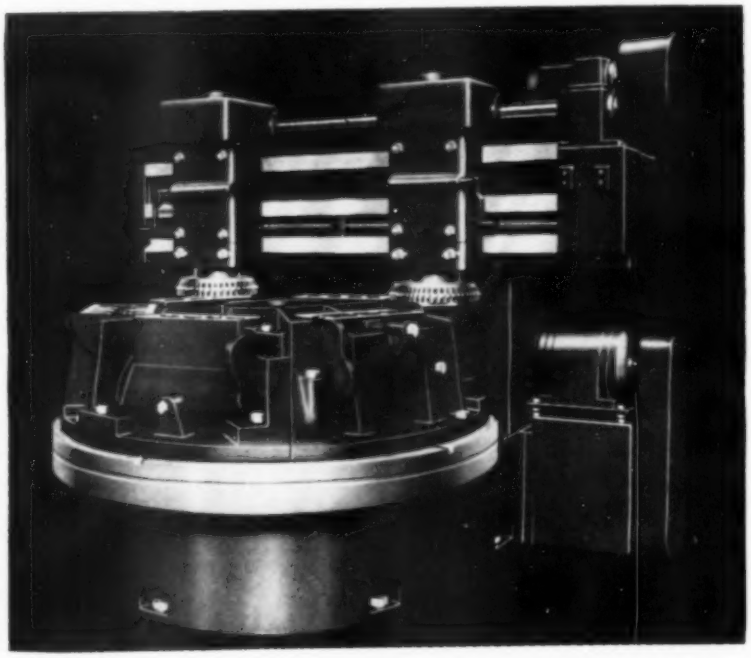
MILLING MACHINE—*Distributed by Cosa Corp, 405 Lexington Ave, New York 17, NY.* The Reishauer Type FA (Swiss) milling machine is especially suited for milling workpieces that require dividing operations. It is equipped with an automatic indexing attachment and is universally adjustable. Max longitudinal slide travel is 15 in., with variable stepless feed from ¾ to 8 ipm. Milling spindle has 9 speeds ranging from 63 to 400 rpm (Nov 18, p210).

ROTARY MILLING MACHINE—*Machine Tool Dept, Box 154, Hamilton Div, Baldwin-Lima-Hamilton Corp, Hamilton, Ohio.* Miller, designed for automotive industry, has 72-in. circular table and twin spindles. Spindle heads are independently adjustable vertically and horizontally, enabling operator to rough cut and finish in one pass, or to cut on two levels in two different cutting circles (Feb 25, p200).

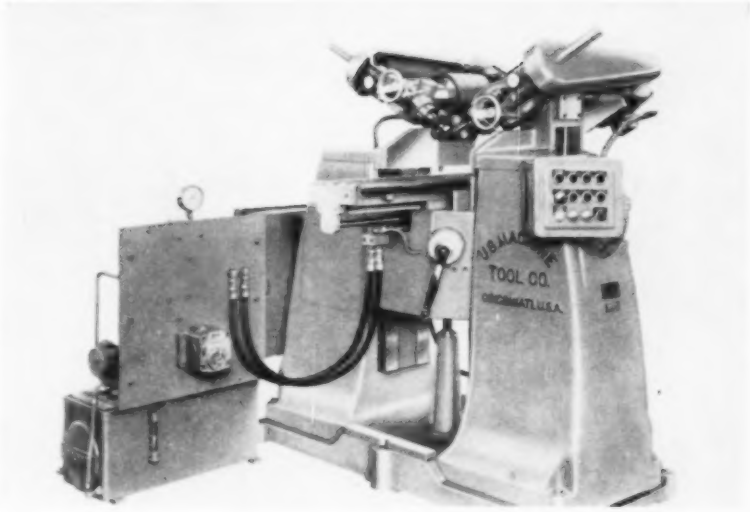
POWER SUPPLY—*Anocut Engineering Co, 531 W Washington Blvd, Chicago 6, Ill.* Power supply units of 1000- and 3000-amp size provide production rates in electrolytic grinding and milling of parts. Units permit use of larger grinding wheels, with more rapid stock-removal rates (Feb 11, p184).



HIGH-SPEED MILLING MACHINES—*Onsrud Machine Works, Inc, 7720 N Lehigh Ave, Niles, Ill.* New line is designed for aluminum, magnesium, brass and related nonferrous metal milling. Designated Mach-Mils, the machines are built as two basic types—those with rotary feed tables, represented here by the Model DA-50AE vertical contour and face milling machine; and those with rectangular tables and planer-type or standard milling machine table feeds. Line is designed to produce work to tolerances of ±0.0005 in. or better (Nov 4, p184).

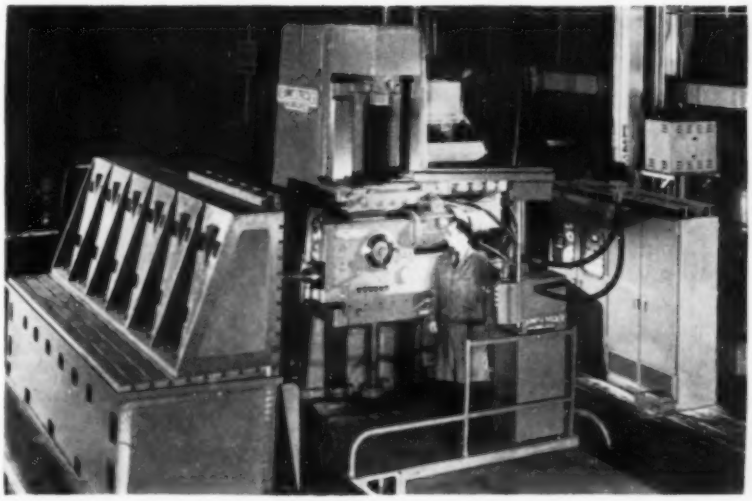


HYDRAULIC MILLER—*U S Burke Machine Tool Div, 6 Brotherton Rd, Cincinnati 27, Ohio.* Unit construction of Hy-Flex production milling machine permits mounting of any type of head. Illustration shows machine with two independent milling heads with 5½ in. of quill travel. Table has 30-in. max stroke, adjusted by movable dogs; infinitely adjustable feed rate; forward and return jog; and automatic or semi-automatic cycling of rapid traverse, feed, return and stop (Apr 8, p170).



MILLING MACHINE—*Duff Machine Co, 31 Wingate St, Haverhill, Mass.* Vertical miller is now available with a Bellows Air Feed for the longitudinal travel of the table. Model illustrated has 12-in. double-action Hydro Check, with a 15-in. air motor cylinder. Air motors and Hydro Check units can be supplied for 1½ to 18-in. travel (Nov 4, p198).

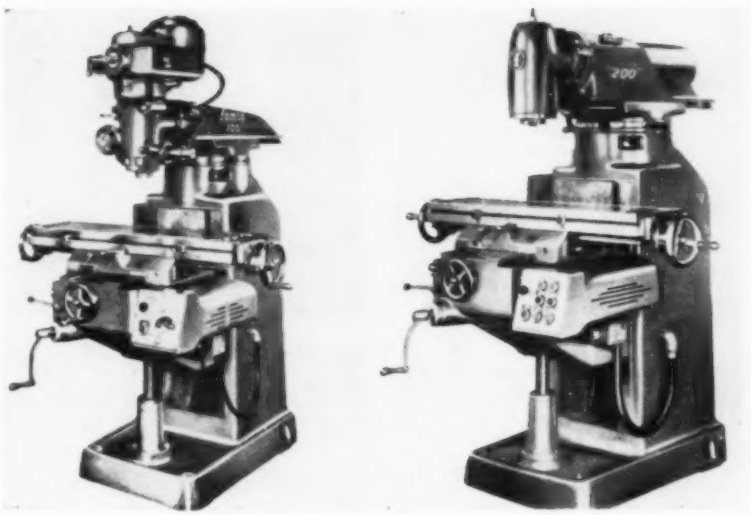
TRACING ATTACHMENT — *Tracer Control Co, 595 East 10 Mile Rd, Hazel Park, Mich.* Visual indicator attachment mounts on tracer unit head of company's Duplimatic tracer control devices and gives visual readings on each of the three movements of the stylus. Unit may be installed on existing machines or specified on new machines (Aug 12, p162).



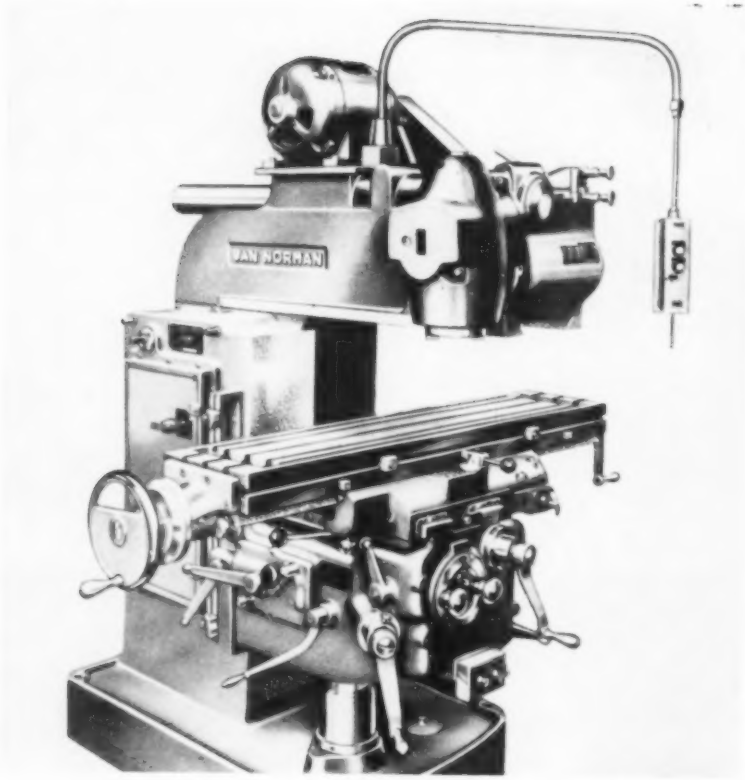
PROFILE MILLER — *Kearney & Trecker Corp, 6784 W National Ave, Milwaukee, Wis.* Numerically controlled unit mills steel and aluminum, has feed rates from 0.020 to 100 ipm. Spindle has 20-hp motor, speeds from 36 to 1800 rpm. Motion control unit was developed and built by Bendix Aviation Corp (May 6, p175).

MILLER—*Imported by Maserati Corp of America, Westbury, LI, NY.* Maserati (Italian) Model 3 has power rapid traverses in all directions, dual automatic selection of speeds and feeds, and dual controls for all power feeds and rapid traverses. Specifications: max distance from spindle to table, 18¼ in.; distance from column to brace, 31⅞ in.; table surface, 59 x 13 25/32 in.; table swivel (universal) 45° (Feb 25, p202).

FIXED-CENTER MILLING HEAD—*Thriftmaster Products Corp, 1916A N Plum St, Lancaster, Penna.* Unit mounts on over-arm of milling machine and is supported against column. Short-type spindles eliminate overhang and provide more rigid tool mounting (Mar 11, p208).



VERTICAL MILLING MACHINES—*Famco Machine Co, Kenosha, Wis.* Famco 100 1-hp vertical mill is primarily a toolroom mill. It has a speed range of 120 to 4300 rpm or an optional range of 75 to 2800 rpm. Power feed to the quill provides three feed rates—0.0015, 0.003 and 0.006 ipr. The Famco 200 2-hp mill is built for heavy production work. Spindle has 12 speeds in a range of 80 to 2100 rpm (Nov 4, p183).



MILLING MACHINES—*Van Norman Machine Co, Springfield, Mass.* Model 24LA features 9 speeds, ranging from 50 to 1400 rpm. Cross travel is 12 in.; longitudinal, 28 in.; vertical, 20 in. Two other machines are available: Models 24MA, with 12 speeds from 40 to 1600 rpm; and Model 24MLA, with 9 speeds from 50 to 1400 rpm, and max vertical distance of 22 in. from spindle to table (Jul 29, p143).

CONTOUR MILLS—*Colonial Broach & Machine Co, Colonial-Romulus Div, Parkgrove Station, Detroit 5, Mich.* Hydro-Cycle contour mills are available in complete line, either as complete machines or as units for "building-block" erection. Tracer attachment can be furnished with single-dimensional, 2-dimensional, or 3-D control. Spindle speeds are infinitely adjustable in range of 40 to 3000 rpm (Jul 1, p133).

MILLING MACHINE—*Barker Engineering Co, 500 Green Rd, Cleveland 21, Ohio.* Model A-M, ¾-hp milling machine has head travel of 6 in., table travel of 10 in., and a saddle travel of 4½ in. Table working surface is 6 in. wide by 20 in. long. Micrometer feed screws can be installed on any travel at slight extra cost. Coolant system is available at extra cost (Aug 12, p164).

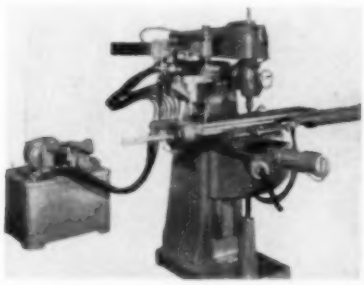
DUPLICATOR—*J M Kalins Co, 1575 Railroad Ave, Bridgeport, Conn.* Model R-200 Regent fluid-motion duplicator permits 2-dimensional contour profiling on any vertical miller. Unit mounts on any table by tightening four bolts, is controlled by a single lever. Capacity is 6 x 6 in. with a 1:1 ratio with the master (Oct 7, p178).

MILLING MACHINE—*South Bend Lathe, South Bend 22, Ind.* Vertical-spindle milling machine features head that swivels 360° on end of overarm for milling, drilling, or boring at any angle. Spindle has 4-in. vertical travel. Eight spindle speeds range from 90 to 2500 rpm with ¾-hp, 1200-rpm motor; from 135 to 3750 rpm with 1-hp, 1800-rpm motor (Jun 3, p152).

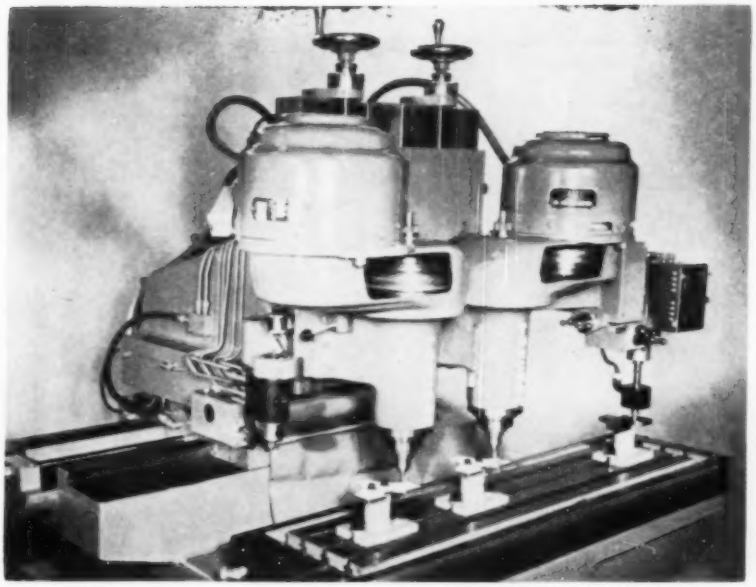
VERTICAL MILLER—*Rotex Punch Co, Inc, 2350 Alvarado St, San Leandro, Calif.* Rotex vertical milling machine, Model VM, has an all-angle vertical head; T-slotted table; large, easy reading dials; and storage cabinet. Working surface of table is 20 x 5 in. Five spindle speeds range from 390 to 5200 rpm (May 20, p200).

COUNTER—*Pacific Transducer Corp, 11836 W Pico Blvd, Los Angeles 64, Calif.* Leadscrew revolution counter, designed for use on all types of machine tools, fits all standard milling machines, and is made in various thread sizes to fit any special leadscrew-handle bolts. Model 0.123 sells for $39.50 (Sep 9, p206).

TWO-SPINDLE TRACER — *Turchan Follower Machine Co, 26950 Van Born Rd, Box 6055, Dearborn, Mich.* Fully automatic 2-spindle tracer, called Hydro-Router, is designed for intricate internal and external contouring. Company's 3-D tracing control can be added to provide combination of profiling and contouring. Each spindle has 2-hp motor and is completely adjustable vertically. Spindle speeds range from 130 to 11,750 rpm, feed rates from 0 to 40 ipm (Jun 3, p149).

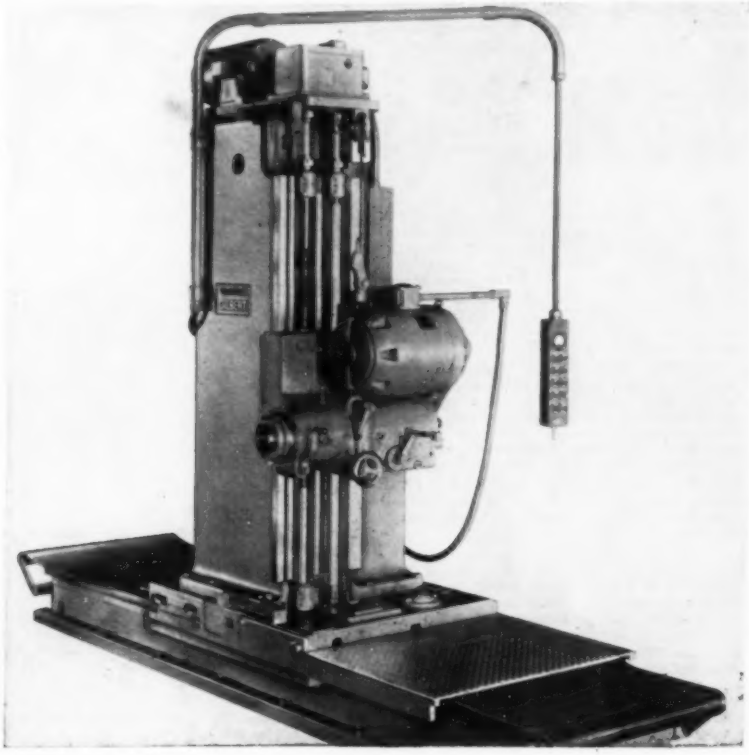


DUPLICATING ATTACHMENT—*US Burke Machine Tool Div, Brotherton Rd at PRR, Cincinnati 27, Ohio.* U S vertical milling machine may be equipped with a two-dimensional table and saddle Turchan duplicating attachment which will permit milling of irregular contours. The 20 x 10-in. attachment is complete with pencil-type stylus. Range and capacity of the milling machine are in no way limited by the addition of attachment (Nov 18, p189).



MILLER—*Distributed by Aaron Machinery Co, 45 Crosby St, New York 12, NY.* Abene Model VHF-2B combines working scope of vertical and horizontal millers. Spindle can be placed at right angle with the longitudinal line of table and is adjustable for any angle from zero in horizontal plane to 45° over vertical. Table is 40 x 10¼ in. Twelve spindle speeds range from 50 to 1300 rpm (Nov 4, p188).

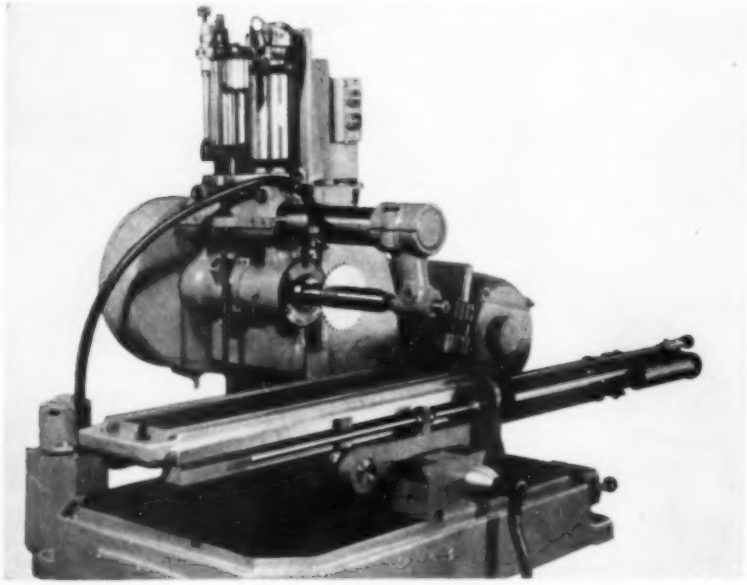
MILL HEAD—*Rusnok Tool Works, 4840 W North Ave, Chicago 39, Ill.* Model 120 mill head, designed for milling, drilling, and boring operations at any angle, offers infinitely adjustable spindle speeds of 100 to 3600 rpm in two ranges, 100 to 600 and 600 to 3600 rpm with only one belt change. Power feed is infinitely adjustable from 0 to 0.012 ipr both up and down (May 6, p175).



MILLING MACHINE — *Imported by Morey Machinery Co, 383 Lafayette St, New York 3, NY.* Geared-head horizontal milling machine, Hero Model 1C, made in Denmark, is available in both plain and universal types. The 12 spindle speeds from 35.5 to 1400 rpm are divided into 6 high speeds, which are driven by a chatter-reducing belt and 6 low speeds, which are gear driven (Apr 22, p196).

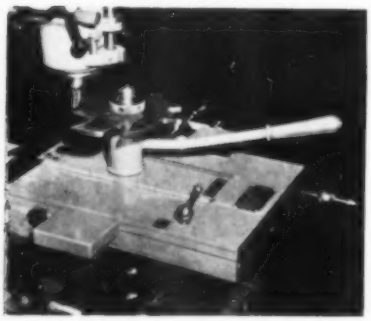
VERTICAL MILLING MACHINE—*Imported by Manex Machinery Corp, 204 Central Park S, New York, NY.* Manex VR2, made in Italy, has eight spindle speeds from 75 to 2850 rpm; all-geared vertical heads; three automatic feeds, 0.0015, 0.003 and 0.006 in.; backlash compensation on longitudinal and cross feeds. Maximum distance from spindle to table is 18 in.; from spindle to column, 25 in. (Apr 22, p190).

FLOOR MILLER—*Cincinnati Gilbert Machine Tool Co, 3366 Beekman St, Cincinnati 23, Ohio.* Pendant-controlled milling machine, for milling ends of structural-steel shapes and other cumbersome parts, is provided with wide range of travels: vertical travel of spindle head is 36, 48, or 60 in.; horizontal travel of column is 48, 72, 96, or 120 in. Spindle speeds are 400-972-1620 rpm. Feed to head and column is 30-40-60 ipm (Feb 11, p159).



FEED TABLE—*Dumore Co, 1300 17th St, Racine, Wis.* Feed table has been developed to increase versatility of company's Versa-Mil unit, as well as to provide additional adjustments on standard machines and precision feeds and slides for jig or fixture setups. Four sizes are available with longitudinal feeds ranging from 8½ in. on the smallest to 42½ in. on the largest. Cross-feed on all is 3⅜ in. Leadscrew is calibrated to 0.001 in. (Dec 2, p148).

MILLER ATTACHMENT—*Russell T Gilman, Inc, 623 Beech St, Grafton, Wis.* Hydraulic-operated slide assembly, used with self-contained power pack, converts standard toolroom miller into semi-automatic production machine. Attachment provides complete cycle of rapid approach, feed, dwell, and rapid return. Over-all stroke length is 8 in. Infinite control of feed rate permits any cutting speed up to max rapid-traverse rate of 160 ipm (Jan 14, p168).



CAM GENERATOR—*Steuby Manufacturing Co, St Louis 13, Mo.* Gen-A-Cam, used with milling machine or surface grinder, makes accurate and constant rises on all plate cams. Manufacturer states machine will generate lobes of any size and can generate two or more rates of rise on any one lobe, permitting two or more rates of feed for any tool (Apr 22, p183).

MILLING SPINDLE—*Turchan Follower Machine Co, PO Box 6055, Dearborn, Mich.* Equipped with specially designed belt arrangement, spindle drive offers eight spindle speeds from 130 to 2590 rpm. Unit is equipped with No. 40 National Standard MM taper, has 2-hp motor, and is 29 in. high, 14 in. wide, and 28 in. long (Jul 29, p154).

SHAPING ATTACHMENT—*Dorden & Co, 18750 Fitzpatrick Ave, Detroit 28, Mich.* Horizontal milling machine can be changed into vertical shaper with attachment called Mill-Shape which fits directly on arbor, close to mill frame or as far out as arbor will permit. Model MS-1 has non-adjustable 2½-in. stroke. Model MS-2 has adjustable stroke up to 3 in., swivels in two directions (Jan 14, p162).

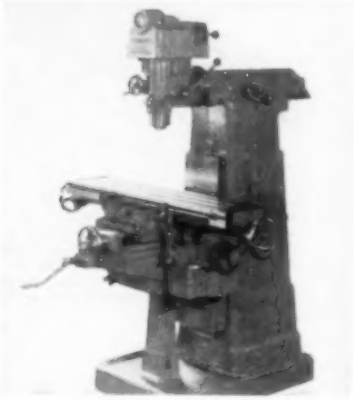
WORM MILLING MACHINE — *Imported by Eric R Bachmann Co, Inc, 27-11 41st Ave, Long Island City 1, NY.* Model MS-15 from Germany takes up to ⅞ DP worms and features electromagnetic clutch and double-worm drive to milling cutter. Six cutter speeds and four feeds are available. Small model, MS-12, has range up to 2 DP, max work dia of 10¼ in. and max length of 20½ in. (Feb. 11, p176).

MILLING MACHINE—*Van Norman Milling Machine Co, Springfield, Mass.* Model 28A ram-type milling machine features adjustable cutter head which allows one machine, without attachments, to perform horizontal, vertical, and angular milling. Machine has 12 speeds, ranging from 40 to 1600 rpm, cross travel of 14 in., longitudinal travel of 28 in., and vertical travel of 21¼ in. (Jul 1, p135).

COPY MILLER—*Distributed by Barer Engineering & Machinery Co Ltd, Champlain, NY.* Kampf FK 3 can be operated from two different positions. Speeds range from 300 to 7000 rpm. Max distance from milling table to spindle is 24 in. Depth feed of the milling cutter is adjustable from 0.004 to 0.020 in.; line feed is adjustable from 0.002 to 0.020 in. (Jul 15, p192).

MILLING MACHINE—*U S Burke Machine Tool Div, Brotherton Rd & PRR, Cincinnati 27, Ohio.* No. 1 U S Half-Mill may be equipped with a micrometer depth stop, screw manual head feed, and longitudinal screw feed table, for toolroom and light boring operations. Combination of 18-in.-stroke table feed and 4-in.-stroke head feed makes unit into semi-automatic production machine (Sep 9, p187).

BEVELED GEAR BLANKS—*George Gorton Machine Co, 1321 Racine St, Racine, Wis.* Special 4-spindle vertical milling machine for gear blanks mills out two recesses. Operator unloads and loads two fixtures while two pieces are machined. Speeds are infinitely adjustable; machine accepts 3-D hydraulic tracer control. Production is 200 pieces per hr (Jun 17, p188).

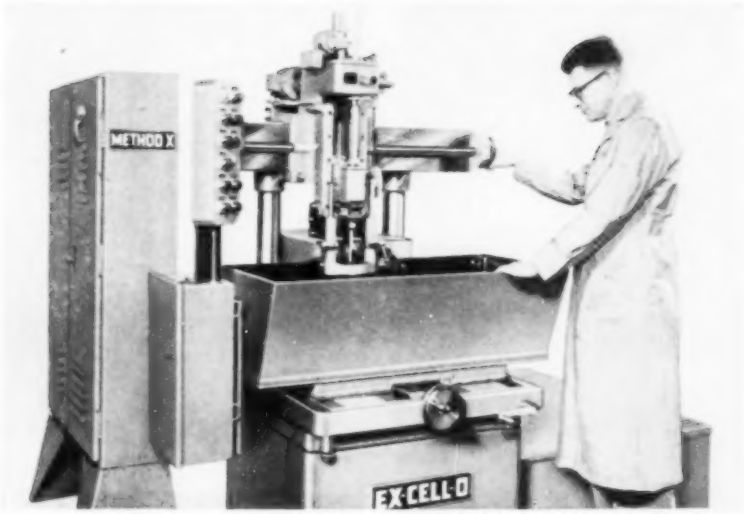


VERTICAL MILL—*Fenlind Engineering Co, 5602 Pike Rd, Rockford, Ill.* Rockford Mill features an infinitely variable spindle speed drive, rigidly-held rotating head, vibration-free quill, and positive automatic depth control. Speeds of 85 to 560 rpm are available in low range; 600 to 3720 rpm in high. Positive quill-control lever provides stepless quill feed range from 0 to 0.008 ipr (Nov 18, p192).

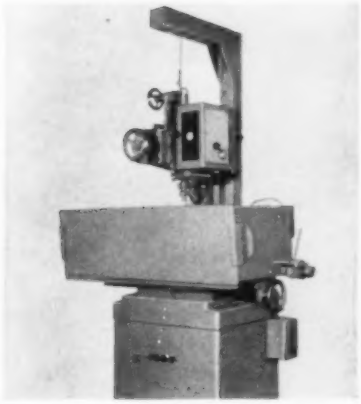
HORIZONTAL MILLER—*Imported by Eric R Bachmann Co, Inc, 27-11 41st Ave, Long Island City 1, NY.* Loewe Model FH 5 FS horizontal milling machine (West Germany) is adaptable to conventional milling, climb milling, alternate milling, jump feed, automatic cycling. Machine has selection of feed and speed ranges, 3-direction automatic table movement, and table surface of 14 x 59 in. (Mar 11, p184).

MILLER—*Distributed by Robert E Morris Co, West Hartford 7, Conn.* Machine developed by W H Nichols Co for processing ingots for transistor manufacturing is of rise and fall spindle type with speeds up to 10,000 rpm. Diamond-impregnated sawing disks up to 8-in. dia can be accommodated. Automatic transverse feed of 6 in., adjustable in increments from 0.001 to 0.085 in., is synchronized with automatic pneumatic feeds of spindle head and table (Apr 22, p188).

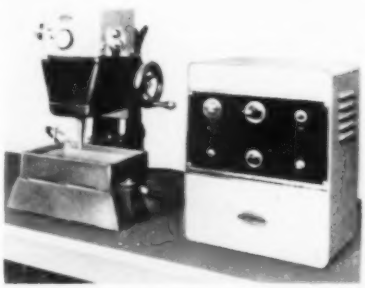
ELECTRICAL DISCHARGE, ULTRASONIC



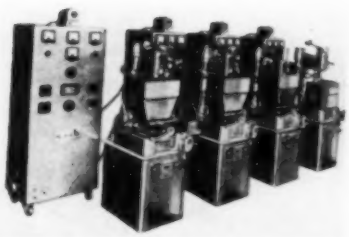
ELECTROSPARK MACHINE—*Ex-Cell-O Corp, 1200 Oakman Blvd, Detroit 32, Mich. Style* 243-6 vertical Electrospark machine uses company's Method X process to pierce, drill, trepan, tap, or sink a cavity in any material that is an electrical conductor. Both tool and electrode are submerged in dielectric bath. In addition to machining hard materials such as carbides, machine will cut a variety of regular and irregular shapes (Jun 17, p202).



ELECTRICAL DISCHARGE MACHINE—*Elox Corp of Michigan, 1830 N Stephenson Hwy, Royal Oak 3, Mich.* M-501 DieMatic is specifically designed for the die machining field and is completely automatic. Machine can cut any metal regardless of hardness or density. Unit has longitudinal travel on table, cross-slide travel on overarm, and vertical adjustment on cross slide assembly (Sep 9, p188).

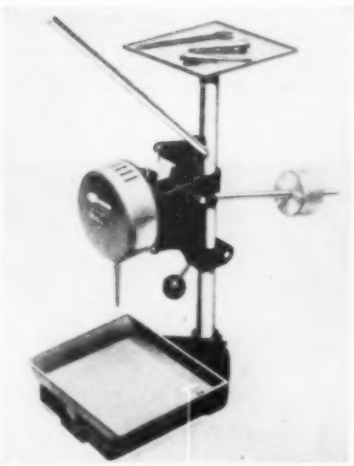


ULTRASONIC IMPACT GRINDER—*Commercial Equipment Div, Raytheon Mfg Co, 100 River St, Waltham 54, Mass.* Lowcost unit uses ultrasonic energy to drill, slice, trepan, engrave and shape hard and brittle materials with tolerances to ±0.0007 in. and finish to 8 mu-in. Tool will handle hard and soft steels, titanium carbide, tungsten carbide, ceramics and glass (May 6, p174).



ELECTRICAL DISCHARGE MACHINE—*Distributed by Easco Products, PO Box 587, Ypsilanti, Mich.* Mark III Sparcatron electrical discharge machine is capable of cutting intricate outlines and contours in hardened metal, particularly in tool and die making. Head stroke is maximum of 3 in. for each setting. The 20 x 13-in. table will hold up to 500 lb. Control can be manual or automatic (Nov 4, p190).

ULTRASONIC CUTTING TOOL—*Sheffield Corp, Springfield & Thomas Sts, Dayton 1, Ohio.* Lightweight unit converts ultrasonic waves into high-speed mechanical oscillations making possible cutting and machining of ceramics, porcelain and glass, as well as metals. Process is effective only on extremely hard substances and harmless to anything resilient, such as operator's hand or fingers (Feb 11, p158).



ULTRASONIC DRILL—*Distributed by Acoustica Associates, Inc, Glenwood Landing, LI, NY.* British ultrasonic equipment consisting of 50-watt ultrasonic generator, drill head, and drill stand is designed to drill hard and brittle materials. Drill will cut holes ranging from 0.0006 to ⅜-in. across. Normal maximum depth obtainable is ½ in. (Jan 14, p164).

American Machinist

1958

PRODUCTION PREVIEW

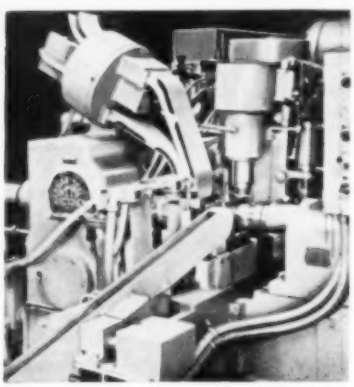
GEAR CUTTING AND FINISHING

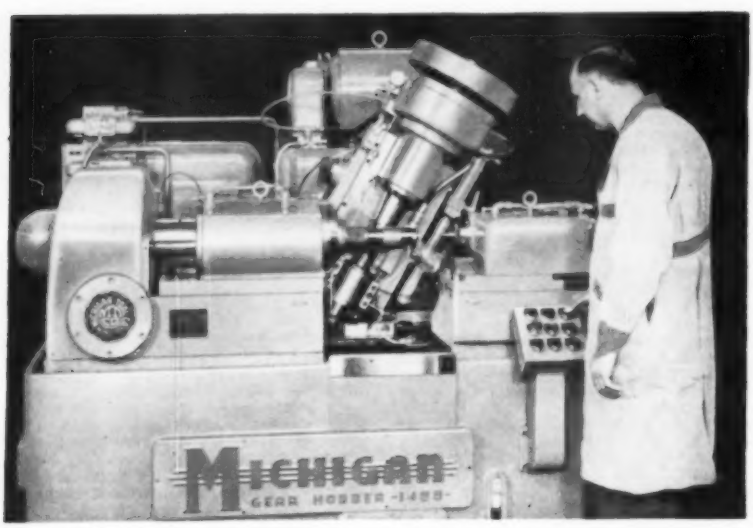
HOBBER—*Imported by Marac Machinery Corp, 45 S Broadway, Yonkers, NY.* Staehely SH 250 gear hobber is available in two models; normal design with cutter speeds from 74 to 235 rpm, and high-speed design with cutter speeds from 100 to 400 rpm. Vertical feed is adjustable from 0.010 to 0.710 in. per rev of work table; horizontal feed from 0.020 to 0.145 in., per rev. (Apr 22, p194).

SPLINE-SHAFT HOBBER—*Imported by Eric R Bachmann Co, Inc, 27-11 41st Ave, Long Island City 1, NY.* Model MK-6 from Germany also hobs spur-gear pinions. Six cutter speeds and feeds are available. Machine is suitable for conventional as well as climb hobbing. Splines of 4 DP up to 25¼-in. length (40-in. length optional) can be hobbed from 4 teeth upwards (Jan 14, p181).

GEAR SHAVER CONTROL SYSTEM —*National Broach & Machine Co, 5600 St Jean, Detroit 13, Mich.* Feed and control functions of four individual Red Ring gear shavers have been integrated in system which also inspects all finished gears. System, adaptable to cluster-type gears having two or more gears on part, utilizes curved inclined feed chutes and motorized vertical chain conveyors as intermachine storage devices (Jun 3, p156).

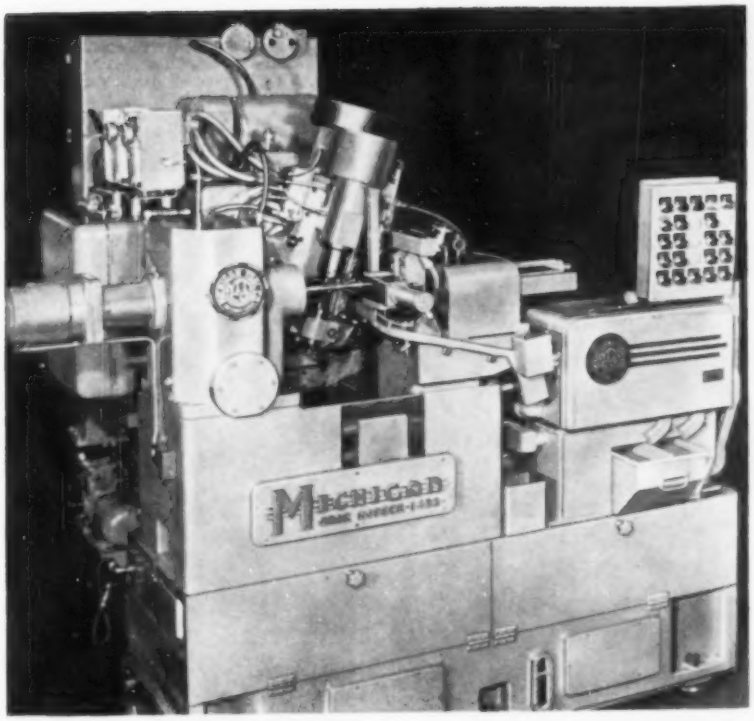
GEAR-SHAPER HEAD — *Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Two-position cutting head for Shear-Speed gear shapers permits cutting two different pitch diameters on one part in single setup. Two sets of teeth are cut in sequence with head moving to two stop positions. Differential tool feed cuts the varying pitch dia (Jun 3, p164).



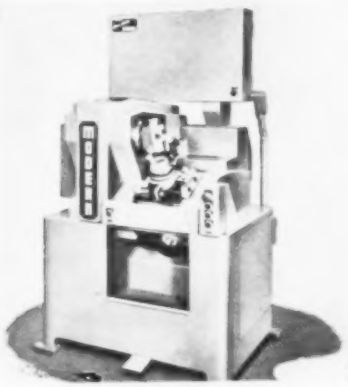


GEAR FEEDER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Designed primarily for use with company's Model 1445 Hobber, feeder is particularly applicable to gears with extended hubs and similar parts which tend to support each other when mounted in pairs on an arbor. Rotating arm positions parts back-to-back as they go into hobber (Nov 4, p198).

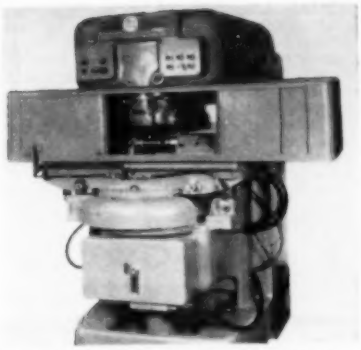
GEAR HOBBER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Model 1458-B high-speed gear hobber is horizontal single-spindle machine that has 8-in. center distance between hob arbor and work spindle. Entire hobbing cycle is automatic; either conventional or climb hobbing may be used with single or multiple-thread hobs. Machine hobs up to 4-pitch spur or helical gears. Maximum crossfeed stroke of hob is 5 in. (Sep 23, p190).



GEAR HOBBER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Model 1433 Ultra-Speed gear hobbers, using a common sub-base, can be set up in tandem or unlimited series with automatic through-feeding and removal of parts. Gear washers and classifiers can be integrated into units. Hobbing cycle is automatic. Hobs revolve at speeds up to 500 rpm; either conventional or climb hobbing may be used with single, double, or triple thread holes (Mar 25, p188).

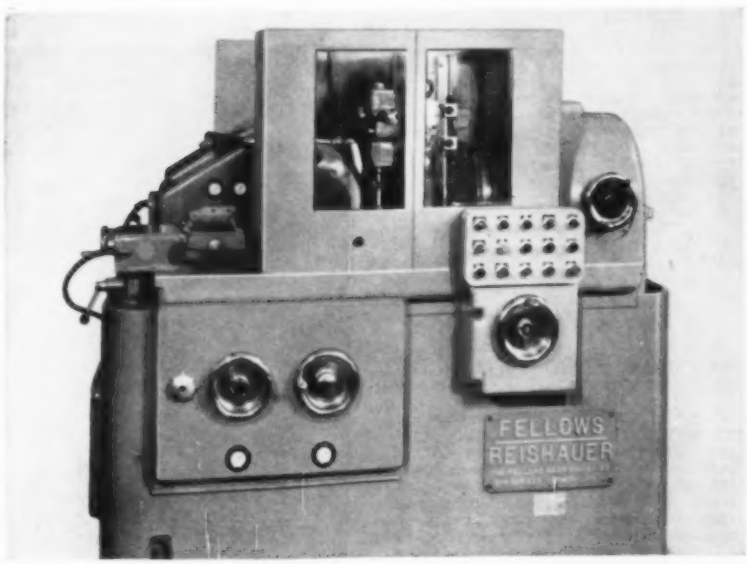


DEBURRING MACHINE—*Modern Industrial Engineering Co, 14230 Birwood Ave, Detroit 39, Mich.* Model BMHP-15 Burr-Master single-station machine handles pinions of 8 to 15 teeth, with OD range of 3¼ to 8 in. and shaft lengths up to 15 in. Max rate is 280 gears per hr. Machine deburrs and chamfers acute-angle profile and part of root at both toe and heel end of each tooth; and can produce peripheral chamfer on large end (Mar 25, p200).

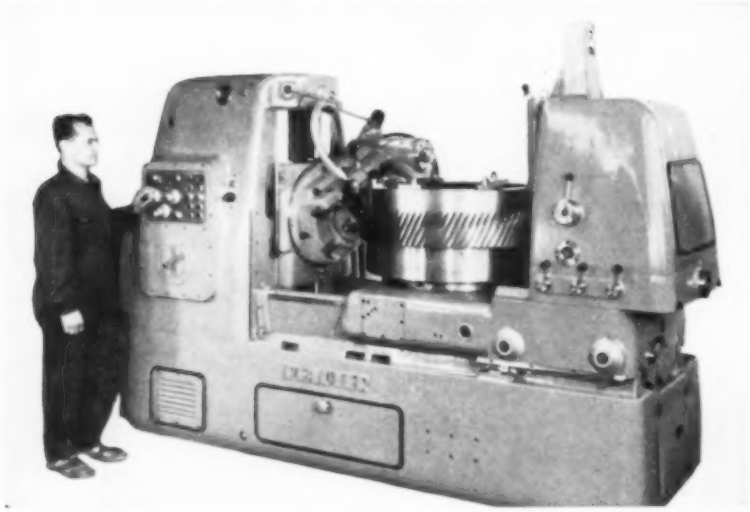


ROTARY GEAR SHAVERS—*National Broach & Machine Co, 5600 St Jean, Detroit 13, Mich.* Line of Red Ring machines has new column design. Tunnels cast in column provide space for controls and control panels. Model GCU-8 in. is equipped for semi-automatic loading and will shave spur or helical gears up to 4 DP having PD's from 1 to 8 in. Model GCU-12, from 1 to 12 in. (Feb 11, p162).

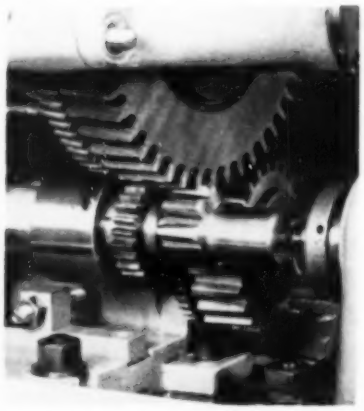
GEAR HOBBER—*Imported by Eric R Bachmann Co, Inc, 27-11 41st Ave, Long Island City 1, NY.* Gauthier Model W-1 precision gear-hobbing machine (German) is equally suited for production of spur gears and for mass production of pinions by means of magazine feed. Hobber has a range from 5 to 230 teeth and diametral pitches of 30 or finer. Max gear diameter accommodated is 2½ in., while max gear face is 1 9/16 in. (Mar 25, p198).



GEAR GRINDER — *Fellows Gear Shaper Co, Springfield, Vt.* No. 12 Fellows-Reishauer gear grinding machine is being made in U. S. and Canada under license from the Reishauer Tool Works Ltd, Zurich, Switzerland. Machine is capable of grinding spur and helical gears up to 12-in. OD and 6¾ in. face width. Two leadscrews are available, one covering from 6 to 48; other, from 20 to 120 diametral pitch (Sept 9, p185).

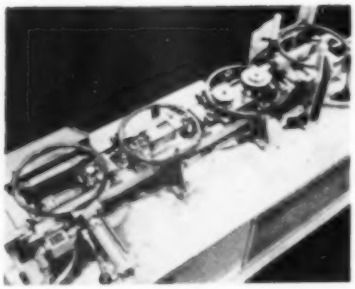


GEAR HOBBER—*Imported by Pfauter Machine Co, 35 Lawrence St, Yonkers, NY.* Type P-900 high-speed gear hobber is designed for high production as well as jobbing work. Universal hob head permits longitudinal as well as tangential hobbing of worm gears. Tooth depth settings are made by dial. Capacity is 3 DP in steel at 36-in. dia. Max face width is 15 in. (Jun 3, p162).

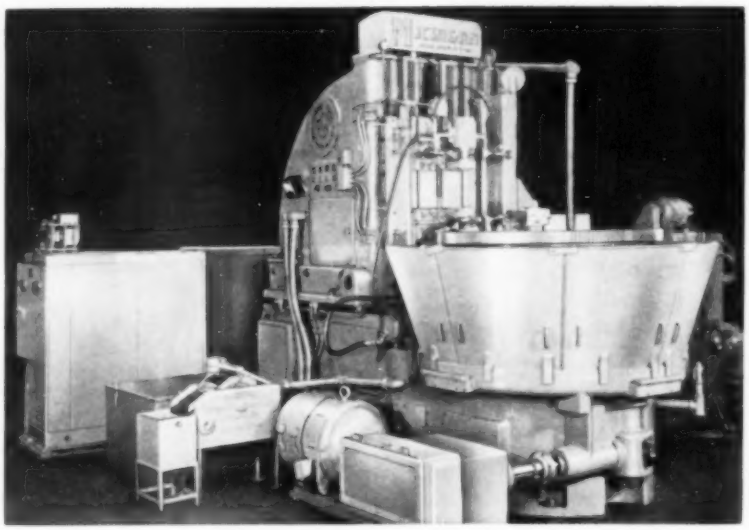


GEAR HOBBER—*Imported by Pfauand Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* To carry out simultaneous sector gear shaving and deburring on standard Red Ring rotary shaving machines, a new rotary deburring tool has been developed. Tool has conical involute tooth shape and meshes with gear segment. The form of the deburring tool teeth at their root portions is designed so that the shaving burr at OD of sector work gear is removed as it is produced (Sep 23, p187).

GEAR GENERATING MACHINE — *Illinois Tool Works Machine and Instrument Div, 2501 N Keeler Ave, Chicago 39, Ill.* Machine called Gerite combines principles of rotating gear blank tangential feed and single-point cutting. It generates spur or helical gears to 45° helix. Dial control regulates speed from 200 to 1800 spm; uniform velocity and proper tooth angle are maintained during full length of cut. Gears up to 3-in. in dia from 30 to 300 pitch can be generated (Nov 18, p206).

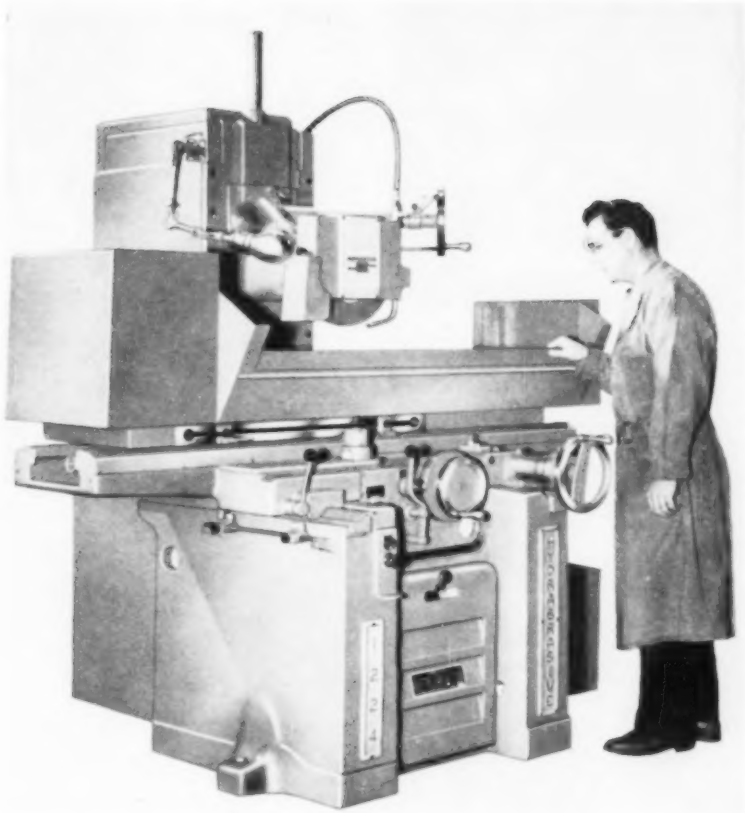


RING GEAR STRAIGHTENER—*Cargill Detroit Corp, Birmingham, Mich.* Automatic unit rounds up rings from 0.060 in. out-of-round to under 0.007 in. TIR. Unit has capacity of 400 per hr, can process ring diameters from 12 to 16 in. (Apr 9, p178).



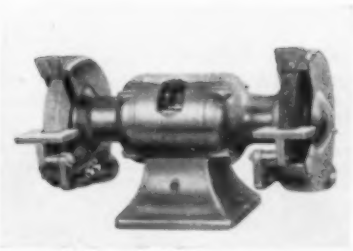
VERTICAL GEAR SHAPER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Large gears are finished on Model V-48 vertical gear shaper which will shave spur, spiral, or herringbone gears up to 4-ft PD, and finish them to 12-15 mu-in. Cutter traverse drive is infinitely adjustable from 0.034 to 0.188 ipm. Checking fixture facilitates checking gear being shaved for spiral pitch and concentricity (Jun 3, p160).

GRINDING, HONING, LAPPING



HYDRAULIC SURFACE GRINDERS—*Abrasive Machine Tool Co, East Providence, RI.* Hydrabrasive surface grinders are available in three sizes: Model 824, 8 x 24 x 2 in.; Model 1218, 12 x 18 x 12 in.; and Model 1224, 12 x 24 x 12 in. All have 12 in. of grinding clearance to table under 12-in. wheel. Hydraulic system operates at 200 psi and is easily removed for inspection and maintenance (Jul 29, p140).

GRINDER GAGE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI.* Continuous measuring gage, series 493-CG, measures output of various types of centerless grinders, and visually indicates any trend toward out-of-tolerance work. Indicating limits can be set within tolerance spread so that indication is given before limit is reached (Apr 22, p190).



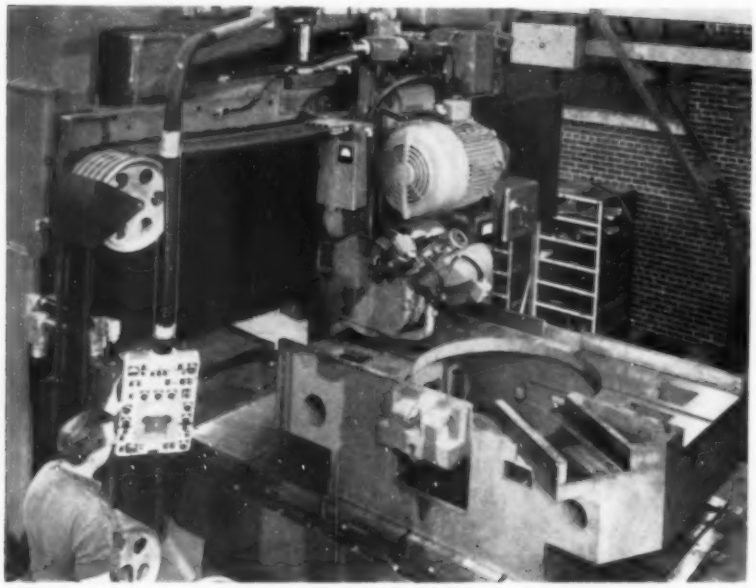
SURFACE GRINDER—*Mattison Machine Works, Rockford, Ill.* This grinder has two work spindles and is capable of grinding work 80 in. wide. Both heads are controlled from single pendant. Vertical head swivels up to 50° each way, permitting grinding of V-ways, dovetails, shoulders, edges, contours, and radii, all in single setup. Horizontal spindle takes up to a 22-in.-dia by 6-in.-face wheel; vertical spindle takes up to a 20-in.-dia segmental wheel (Dec 30, p127).

PROJECTION GRINDER—*Cleveland Grinding Machine, 1610 Eddy Rd, Cleveland 12, Ohio.* VG-3 Visual Grind features continuous lubrication, timer belt, 110-v controls and closer-tolerance downfeed control. Machine is capable of grinding steel and tungsten carbide to precision tolerances without operator stopping to consult comparator. Magnification is from 10:1 to 100:1; downfeed control is graduated to tenths (Jul 15, p186).

GRINDER—*Stanley Electric Tools Div, Stanley Works, New Britain, Conn.* No. 288 heavy-duty 8-in. grinder features extended-frame construction, and is powered by motor that has a smaller diameter than the grinding wheels. Features make it an ideal unit for grinding large odd-shaped pieces. Grinder comes equipped with one coarse and one fine wheel (May 20, p193).

OPTICAL PROFILE GRINDER—*Imported by Aaron Machinery Co, Inc, 45 Crosby St, New York 12, NY.* German Hommel OPSM is hydraulically controlled, and is adaptable to grinding profile gages, circular form tools, straight form tools, press tool punches, cams, and checking of profiles. Projection screen shows profile drawing, corresponding section of workpiece and cutting wheel simultaneously (Mar 11, p180).

WORK-POSITIONING GAGE—*Federal Products Corp, Providence, RI.* Work-positioning gage, called the Sure-Set, incorporates two electronic gage heads which locate on the grinder at the ends of the table and work into a special amplifier. Computer corrects for difference between work length and table length. Operator takes only one set of measurements after his trial cut, adjusts table according to meter indication, then finish grinds (Nov 18, p206).

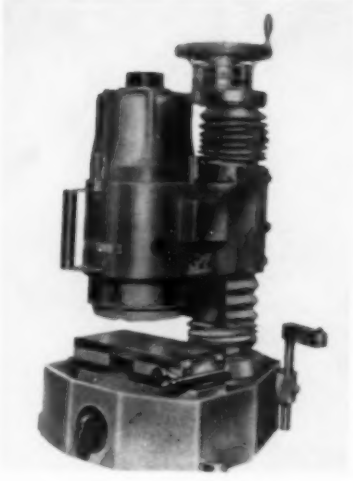


PLANO SURFACE GRINDER—*Mattison Machine Works, Rockford, Ill.* Either horizontal or vertical spindles can be provided on machine which combines some features of open-side planer and conventional double-upright planer. Horizontal spindle motors can be provided in the range of 30 to 75 hp at 1200 rpm, and vertical spindle motors available range between 25 and 60 hp at 900 rpm. Table sizes currently available are either 50 or 60 in. wide, and from 10 to 30 ft long (Jun 3, p148).

CYLINDRICAL GRINDER—*Imported by Eric R Bachmann Co, Inc, 27-11 41st St, Long Island City 1, NY.* Cresta Universal Model 508 (German) has 7¼-in. swing and either 12 or 20 in. between centers. Machine is hydraulically controlled and permits toolroom or production grinding of OD's or ID's. Speed of table can be regulated over range of 4 to 300 ipm. Grinding speeds range from 125 to 610 rpm (Mar 25, p219).

CYLINDRICAL GRINDER — *Imported by Aaron Machinery Co, Inc, 54 Crosby St, New York 12, NY.* Overbeck cylindrical grinder, a German product, is suitable for external and internal grinding. Capacity ranges from the smallest diameter to a max grinding length of 4¾ in. Spindle speeds vary from 30,000 to 120,000 rpm. Infeed of wheel is adjustable from 0.00002 in. per stroke or double stroke (Aug 12, p178).

SURFACE GRINDER—*Imported by S & S Machinery Co, 140 53rd St, Brooklyn 13, NY.* Zocca Quick-Change grinder (Italian) features rigid turnabout column which makes vertical and horizontal heads interchangeable. Down feed of wheelhead is variable from 0.0002 to 0.0025 in. per stroke of table. Hydraulically driven table has speeds from 3 to 100 fpm (May 6, p184).



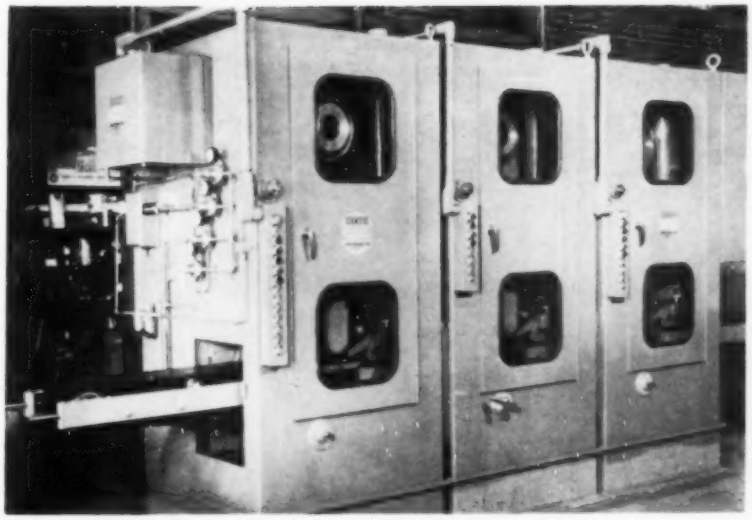
SURFACE GRINDER — *McCauley Industrial Corp, 1840 Howell Ave, Dayton 7, Ohio.* Surface grinder, designed for grinding of small to medium-size parts, has working area of approx 8 x 6 in. Machine is 32 in. high, uses a 7 in. wheel, and has a max vertical travel of 9½ in. It weighs 330 lb, has 3-hp 3450-rpm motor, and sells for $643 (Aug 26, p154).

SPECIAL GRINDER—*Ex-Cell-O Corp,* 1200 Oakman Blvd, Detroit 32, Mich. Jet-engine vane roots are ground automatically on 3-slide grinder equipped with 4 grinding wheels mounted on 3 spindles. Three wheels have 15-in. dia, fourth wheel 20-in. dia. Each slide is equipped with diamond dresser. Slide movements include rapid approach, adjustable fine feed, and adjustable spark-out period (Mar 11, p184).

BACKSTAND IDLER—*Fenlind Engineering Co, 5602 Pike Rd, Loves Park, Ill.* Fenlind L-610 designed as belt idler for grinding and polishing lathes is adaptable to precision or roughing work. Linkages permit mounting of both tracking and tension arms at any position. Control arms can be adjusted to accommodate belts of any length. Aluminum-alloy pulley is 10 in. in diameter and 6 in. wide (Feb 11, p176).

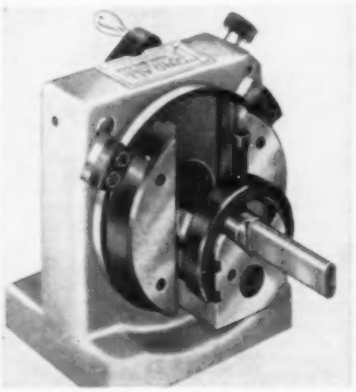
CUTTER GRINDER—*Imported by Aaron Machine Co, 45 Crosby St, New York 12, NY.* Pear Model 3-ZN is universal-type, Italian-made unit with built-in ¼-hp electric motor. Cutter can be used to grind tapered-shank cutters (Feb 11, p176).

GRINDER—*Homestrand, Inc, 9 Addison St, Larchmont, NY.* Johansson grinder (Sweden) is available in two types: Model 2P for production, and Model 2U for toolroom and production use. Center distances are 40, 60, and 80 in.; swing over table is 14 in. 2P takes grinding wheels of 20-in. dia and up to 3-in. width; 2U takes up to 30-in.-dia wheels and 4-in. width. Table travel is 236 ipm maximum. The 12 speeds range from 20 to 320 rpm (May 6, p180).

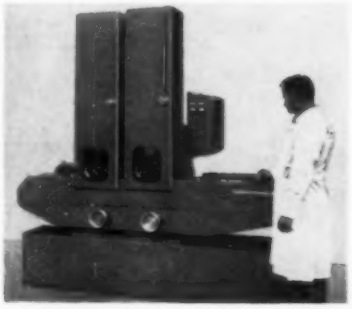


GRINDING MACHINE—*Curtis Machine Div, Carborundum Co, Jamestown, NY.* Curtis Straight-O-Matic, Model R600C-3, employs three abrasive belts over one conveyor belt and is equipped with wet grinding, oil mist applicator, automatic tracking and pneumatic tensioning of the 10-in. wide abrasive belts. Unit makes possible 3-grit polishing sequence, a 3-step stock removal for sizing, or combined polishing and grinding (Feb 25, p189).

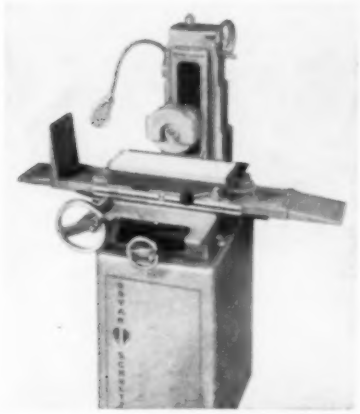
GRINDER CONTROL — *Industrial Gauges Corp, EAM Division, West Englewood, NJ.* Li-Ap Autopairer automatically controls any grinder to produce external pieces to fit bores within limits of desired radial play. Accuracy can be guaranteed down to 0.000040 in., regardless of type of grinding machine (May 20, p228).



WAY GRINDER—*Thompson Grinder Co, Springfield, Ohio.* Hydrail surface grinder with a work area of 48 x 36 x 240 in., designed and built for the Landis Tool Co, Waynesboro, Penna, features independent operation of the vertical and horizontal wheel heads. Horizontal wheel head uses 24 x 6 x 12-in. wheel at speed of 1200 rpm. Vertical head has inclinable spindle and uses a 12 x 3 x 5-in. wheel at either 1800 or 3600 rpm (Dec 30, p122).

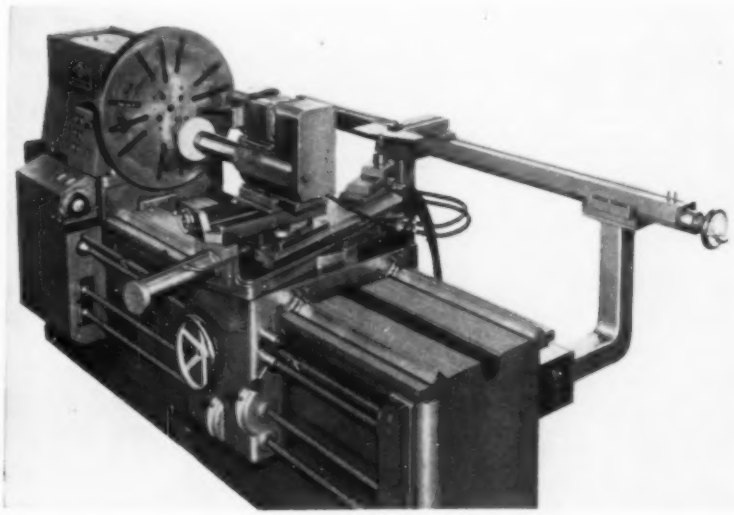


ABRASIVE BELT FINISHER—*Hammond Machinery Builders, 1618 Douglas Ave, Kalamazoo, Mich.* Model FF-6 Flat Finisher is built for wet abrasive belt grinding, polishing, and deburring of flat work such as sheets, strips, bars, stampings, and plates up to 6 in. wide by 6 in. high. Machine is available with single or multiple heads. Head motors up to 7½ hp are available (Dec 16, p164).



GRINDING FIXTURE — *Harig Mfg Corp, 5757 W Howard St, Chicago 31, Ill.* Grind-All fixture grinds irregularly shaped punches concentric with shank within ±0.0002 in. It can also be used for light milling and boring, radius dressing, and as an inspection tool. Single locking screw adjusts V-block to any desired position (Sep 23, p192).

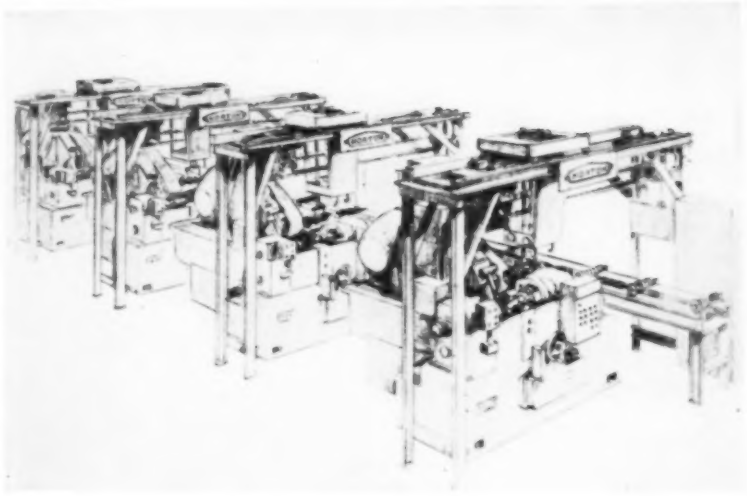
SURFACE GRINDER — *Boyar-Schultz, 2000 South 25th Ave, Broadview, Ill.* Challenger has capacity of 6 x 18 in., and is guaranteed within 0.0002 in. for flatness and parallelism. Cost is $1395 (Jul 29, p148).



CONTOUR GRINDER — *Industrial Tool Engineering Co, 13849 Keal, Detroit, Mich.* Grinding of internal and external contours is possible on tracer-controlled hydraulic contour grinder which uses standard flat wheels dressed to simple radii. Headstock range is from center to 39 in. on OD work. Machine offers work-head speeds from 0 to 220 rpm and grinder-head speed of 3450 rpm. Variable-speed work-head allows machine to be used for polishing and buffing (Mar 25, p191).

GRINDING, HONING, LAPPING

CRANKPIN GRINDING MACHINE —*Norton Co, Worcester 6, Mass.* Norton No. 2 transfer-type automatic crankpin grinding machine is capable of completely automatic, high-production, precision grinding of automotive-type crankpins. In grinding 4-pin crankshafts, machine is designed to finish grind 240 pins per hr. Machine consists of separate, self-contained, easily regulated units each of which grinds a single pin (Aug 12, p166).



COPY GRINDER—*Carl Hirschmann Co, 30 Park Ave, Manhasset, NY.* Copyrex grinder permits simultaneous grinding of two identical cutting tools, profile gages, or production parts. Templet, five times tool size, effects copying process through parallelogram linkage to twin toolholders. Diamond dresser keeps wheels trued. Attachment permits grinding of circular pieces up to 4 in. dia (Feb 11, p170).

ELECTROLYTIC GRINDING ACCESSORIES — *Standard Electrical Tool Co, 2480 W Sixth St, Cincinnati 4, Ohio.* Accessories are available to fit company's Super Precision spindles. Slip ring on back of spindle carries direct current through spindle to grinding wheel, wheel acting as cathode; workpiece, as anode. On wheel end of spindle is sprinkler for spraying electrolytic solution (Apr 22, p216).

GRINDER — *Gardner Machine Co, Beloit, Wis.* Universal joint spiders are ground on all four trunnion ends in one setup on Model 2H30 30-in. double-spindle precision disk grinder. Two parallel ends are ground at a time, then spider is automatically indexed 90° and second pair of ends are ground. Max over-all stock removal is 0.015 in; production is 2400 pieces per hr at 100% efficiency (Aug 12, p176).

GRINDER—*Wesson Co, 1220 Woodward Heights Blvd, Detroit 20, Mich.* Poweramic grinder, an improved model of company's previous unit, features simplified and accessible controls. Tool grinding time is reported to be greatly reduced (Jun 2, p166).

SURFACE GRINDER—*Mattison Machine Works, Rockford, Ill.* Model 400SS vertical-spindle surface grinder, equipped with 100-hp spindle motor, grinds such elongated parts as tables for drillpresses, hardened wear shear blades, and die blocks. Work table is 28 in. wide by 102 in. long. Segmented grinding wheel is 32 in. in dia, 6 x 2-in. face. Clearance under the wheel is 24 in. (Jul 15, p186).

GRINDERS — *Mattison Machine Works, Rockford, Ill.* No. 456 pinch roll belt grinders, capable of grinding titanium, stainless steel, or carbon steel flat stock to precise gage thickness in a single pass are available in four sizes, providing capacities of 36, 48, 60, and 72 in. Feed roll speeds are fully adjustable from 1 to 100 fpm. Machines are designed for both polishing and stock-removal jobs (Oct 7, p166).

GRINDER—*Samuel C Rogers & Co, Inc, 2070 Sheridan Drive, Buffalo 23, NY.* Extra-heavy-duty knife grinder, Model 300 traveling-table type, is available in sizes ranging from 78 to 300-in. capacity. The 26-in.-dia segmental grinding wheel is chuck-mounted, and driven by 25-hp TEFC motor. Swiveling knife bar permits grinding to any required bevel. Automatic infeed is adjustable in increments of 0.0025 to 0.003 in. (Nov 18, p202).

BENCH GRINDER—*Curtis Machine Div, Carborundum Co, Jamestown, NY.* Lightweight Model BBA-O bench grinder has 6-in.-dia, 2-in.-wide contact wheel developing a speed of 5100 sfm. Idler arm has belt-tracking and tensioning mechanisms and can be rotated 360° around spindle to provide operation in any position (Apr 22, p202).

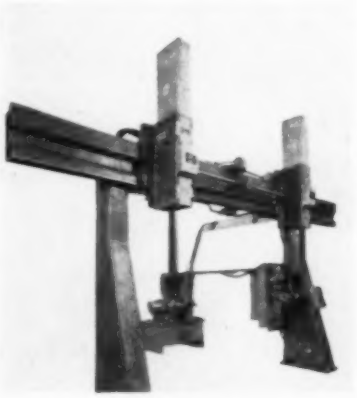
ABRASIVE BELT GRINDER—*Grinding & Polishing Machinery Co, 2530 Winthrop Ave, Indianapolis 5, Ind.* Swingframe grinders, available in heavy-duty and extra heavy-duty models, are furnished in wide range of power, belt widths and lengths, and can be combined with other machines for special applications. Bulletin-110 (Nov 4, p196).

GRINDER—*Standard Electrical Tool Co, 2488 River Rd, Cincinnati 4, Ohio.* Grind-Air-rester is self-contained system featuring grinder and dust collector. Floor space compares with conventional grinder. Units are available in 7, 8, 10, 12, and 14-in. sizes (Jul 15, p196).

GRINDING FIXTURE—*Steptool Co, 3615 E. Olympic Blvd, Los Angeles 23, Calif.* Relief grinder uses cam for infinite adjustment of clearance lift. Index hubs containing indexes for different numbers of flutes can be slipped on or off in seconds. Extended spindle in rear permits addition of pulley. Device uses 5-C collets, has base graduated to 360°, weighs 26 lb (Mar 25, p204).

GRINDING HEAD—*Air Transport Equipment, Inc, Amityville, LI, NY.* Self-contained, motorized, vertical-spindle grinding head (British) can be attached to planers, boring and milling machines, and heavy-duty lathes. Handwheel adjusts rotor to give fine adjustment for depth of cut. Unit develops 1 hp at 3000 rpm, and is fitted with 8-in.-dia cup-type wheel (Sep 23, p204).

WET SURFACE GRINDER—*Lempco Industrial Inc, Bedford, Ohio.* Lempco 545 automatic wet surface grinder is now available in four bed sizes to handle 11½ x 38, 62, 86, and 110-in. work. They are also available with two types of grinding wheel traverse: Model G, with constant 45-ipm traverse; Model E, with infinitely adjustable traverse of 0 to 42 ipm (Nov 18, p200).



TRANSFER DEVICE—*Wickes Corp, Machine Tool Div, Saginaw, Mich.* Automatic loading and unloading device automates standard grinders by transferring workpiece to and from separate grinders. In operation, each loading station lowers to pick up work, raises and transfers it across and down into the grinding work area. Cycle time is about 15 sec. Device operates from an overhead rail (Dec 30, p124).

OPTICAL PROFILE GRINDER—*Distributed by Carl Hirschmann Co, Manhasset, NY.* Petewe unit (West Germany) is available in two sizes: PFS 3D with magnification of 20 and 50X, max workpiece thickness, 2 in.; PFS 4 U, with 10, 20, 50, 100X; max thickness, 3.15 in. (Jan 14, p168).

CHIP BREAKER GRINDER—*Hammond Machinery Builders, 1618 Douglas Ave, Kalamazoo, Mich.* Electrolytic chip breaker grinder takes tools up to 2½ in. wide. Designed for 6 and 10-in.-dia wheels (models CBE-6 and CBE-10), grinder provides fast, single-pass, full-depth grinding. For electrolytic grinding, spindle is insulated from machine and is equipped with power pickup (Jul 15, p185).

GRINDING FIXTURE—*S & D Engineering Co, 2051 W Mountain St, Glendale 1, Calif.* All-purpose tool and cutter grinding fixture can be set up for index grinding, radial relief and finger grinding. Handwheel has 24 equally spaced holes on one side and 35 on other. This combination offers user from 1 to 11 positions. Capacity ranges from 0 to 1½ in. (May 20, p202).

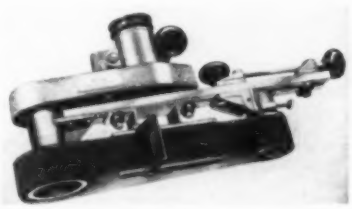
SURFACE GRINDER — *Harvel Co, 5135 Coffman-Pico Rd, Pico, Calif.* Surface grinder has a 10 x 16-in. table—reportedly making it the largest surface grinder in low price field. Grinding wheel is 12 in. in diameter and is powered by a 1-hp 1750-rpm motor. Longitudinal travel is operated by hand feed rack and pinion gear with large handwheel. All feeds are by hand (Nov 18, p198).

TILTING SPINDLE—*McDonough Mfg Co, Eau Claire, Wis.* Direct, positive setting of clearance angles on 25° tilting spindle of Sterling G-2 Tool and Cutter Grinder is said to speed setups and insure accurate grinding. In addition to tilting 25° at one end and 15° at the other, spindle is reversible and rotates 360° (Mar 11, p196).

SURFACE GRINDER—*Imported by Maserati Corp of America, 662 Main St, Westbury, LI, NY.* Blohm Simplex surface grinder (German) features simplified controls and built-in exhaust and wet grinding system. Table is hydraulically powered and speeds are variable from 0 to 85 ipm; electrically actuated cross travel is variable from 0.004 to 2½ in. per stroke of table (Jul 15, p188).

BENCH GRINDER—*Zack Co, Machinery and Equipment Div, 12600 Beech Rd, Detroit 39, Mich.* Wet-type ventilated grinding bench uses high flash-point oil to coat metallic magnesium and aluminum dust particles. Water curtains within washing chamber trap dust particles as they are drawn up by exhaust fan, and wash them down to settling tank. Fumes are removed the same way (Apr 8, p171).

ABRASIVE BELT UNIT—*Grinding & Polishing Machinery Corp, 2530 Winthrop Ave, Indianapolis 5, Ind.* G&P 3-36 weighs 6¾ lb, permits grinding on contact wheel, on platen, or slack of belt. Air-motor-operated tool develops speed of 4700 sfpm (Mar 11, p206).



CONTACT-WHEEL BELT GRINDER—*B & E Mfg Co, Inc, Oak Grove, Mo.* Model 400 has 5 x 2-in. contact wheel and 2 x 48-in. abrasive belt; Model 300, 4 x 2-in. wheel and 2 x 36-in. belt. Features are same as for Model 500 (AM—July 30 '56, p138) (Sep 9, p194).

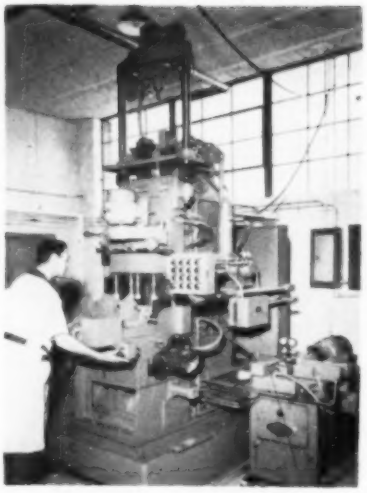
ELECTROLYTIC OSCILLATING GRINDER — *Hammond Machinery Builders, Inc, 1600 Douglas Ave, Kalamazoo, Mich.* Model SCE-6, equipped with Anocut unit for electrolytic grinding, has an oscillating spindle. Both oscillating frequency and length of stroke are variable; frequency from 0 to 160 per min; stroke, from 0 to 1½ in. Pre-determined grinding depth can be set to 0.001 in. Angular setting ranges from 10° above to 25° below horizontal (Oct 21, p200).

CIRCULAR SAW SHARPENER — *Ha[illegible]co Machines, Dept A, 97 Mt Hope Ave, Rochester 20, NY.* Machine automatically sharpens all circular metal-cutting saws from ½ to 14-in. diameter, from the finest teeth up to 2 teeth per in. Arbors are supplied for hole sizes from ¼ to 1-in. dia (Dec 16, p176).

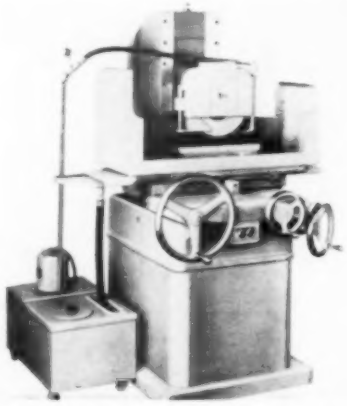
OSCILLATING BASE — *Graybill Industries, Inc, Spokane, Wash.* Tru-Grind oscillating base carries any standard bench grinder back and forth in a controlled stroke while tool to be sharpened is held in place on a steady-rest that remains stationary. Device runs off grinder shaft through belt drive. Base can be adjusted for strokes up to 6 in. Price is $34.50. Manual model sells for $19.50 (Aug 26, p155).

GRINDING MACHINE — *Hammond Machinery Builders, 1618 Douglas Ave, Kalamazoo, Mich.* Heavy-duty 10-in. abrasive belt grinder, Model PD-10, is suited for dry, flat surface grinding, polishing and deburring of castings, die castings, forgings, plastics, ceramics or sheet metal. Multi V-belt drive, 5- or 7½-hp TEFC motor and dynamically balanced pulleys insure smooth operation. Automatic air or spring belt tensioning is available (Nov 4, p190).

ABRASIVE BELT MACHINE—*Hammond Machinery Builders, Inc, 1618 Douglas Ave, Kalamazoo, Mich.* Model 50 grinder combines all the various methods of abrasive-belt finishing—free belt, contour, plate, and contact wheel—into unit which is recommended for ferrous and non-ferrous metals, as well as plastics, ceramics, wood, rubber, and glass. Each belt can be used in vertical or horizontal position (Jun 17, p198).

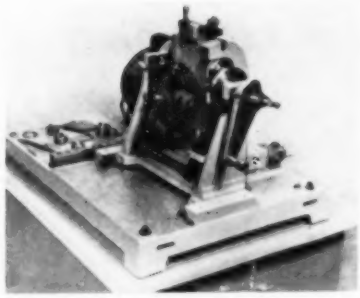


VALVE SEAT GRINDER—*Hall-Toledo, Inc, 2931 South Ave, Toledo 9, Ohio.* Model H-7500 multiple-spindle valve seat grinder is designed for any cylinder head or block with 2, 3, 4, 6, 12 or 16 cylinders and will grind any valve seat material from cast iron through No. 1 Stellite. It is capable of handling wheels of any angle with diameter measurements of ¾ to 3½ in. (Dec 16, p168).

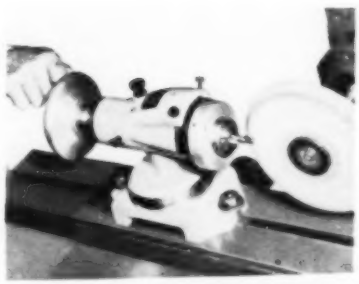


SURFACE GRINDER—*Covel Mfg Co, Benton Harbor, Mich.* Covel No. 17 handfeed grinder, designed for die block and general toolroom work, has its table actuated by timing belt drive. Only 2¾ turns of a large-dia handwheel moves table 16 in. Spindle is driven by 2-hp, 1750-rpm motor. Addition of pump and tank unit converts machine to wet grinder (May 6, p182).

CENTERLESS GRINDER — *Royal Master, Inc, 111 State Highway 23, Riverdale, NJ.* TG 12 centerless grinder handles tungsten carbide, steels, stainless, plastic, ceramics, glass and non-ferrous metals. On production run, machine is said to hold tolerances of 0.0002 in. and finishes of 6 to 8 mu-in. Machine handles workpieces from 0.0004 in. to 1½ in. in dia, and uses either plunge or thru-feed grinding (April 8, p173).

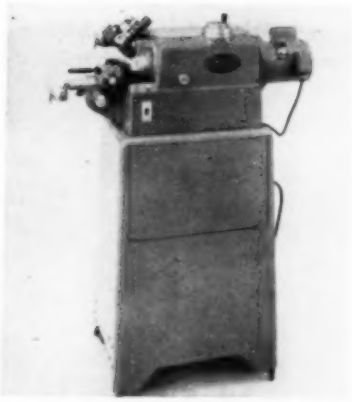


RADIUS GRINDER — *Nassau Tool Works, 208 Meacham Ave, Elmont, LI, NY.* Convex radius grinder can grind either right or left side of a milling cutter on a single point tool to a 90° radius. It can also grind a 180° radius in a single setup. Cutters up to 6 in. in dia, and from practically 0 to 2 in. thickness, can be ground on machine (Apr 8, p180).



RELIEF GRINDING ATTACHMENT—*Steptool Grinding & Mfg Co, 3613 E Olympic Blvd, Los Angeles 23, Calif.* Steptool is said to be able to perform 90% of all grinding jobs which would normally require a complex fixture costing about six times as much. Designed to sharpen taps, countersinks and step-drills, tool features an infinitely adjustable cam and rapid changeover for taps with different numbers of flutes (Dec 2, p160).

CUTTER GRINDER—*Jersey Manufacturing Co, 407 Livingston St, NJ.* Multi-toothed and staggered-tooth milling cutters for climb and conventional milling can be relief milled and form ground on Jemco automatic machine. Copying attachment increases versatility by making possible the cutting of machine components such as cam segments, ratchet sections, tripping mechanisms (May 20, p208).



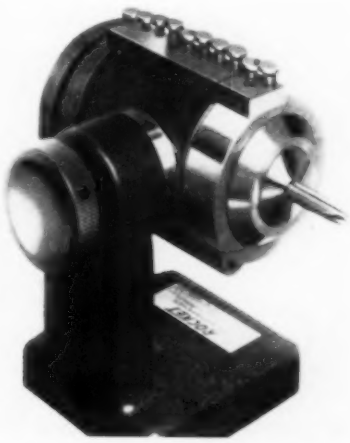
DRILL SHARPENING MACHINE—*Cincinnati Lathe & Tool Co, Cincinnati 9, Ohio.* Spiropoint is designed to grind the newly developed (AM—Oct 21 '57, p 194) spiral point on standard twist drills. Drill is held stationary and the generating system gyrates around drill axis to produce desired shape on end of drill. Machine is built in two sizes—Model 500 to accommodate drills from ⅛ to ½-in. dia, and Model 750 for drills from ⅛ to ¾ in. An attachment is available which enables both models to grind from No. 60 to ⅛-in. drills (Dec 16, p164).

TOOL GRINDERS — *Walker-Turner Div, Rockwell Mfg Co, 400 N Lexington Ave, Pittsburgh 8, Penna.* Six-in. carbide tool grinder features tables which tilt 30° in and 45° out to permit wet or dry grinding at any angle; six-pole reversing switch to reverse rotation. Machine retails for $187.75. Seven-in. tool grinder has special motor with extra-long shafts, providing ample clearance between wheel and motor. Unit retails at $170.65 (Mar 25, p200).

TOOL GRINDER—*Imported by Eric R Bachmann Co, Inc, 27-11 41st Ave, Long Island City 1, NY.* Kuhlmann model FSM/M grinder (German) is suitable for sharpening milling cutters, cutter heads, single-point turning tools, thread- and hob-milling cutters, carbide-tipped tools, and end mills. Attachments are available for reamer sharpening, radius grinding, and for sharpening of helix-fluted tools. Machine sells for $1250 (Apr 22, p207).

DRILL GRINDERS—*McDonough Mfg Co, Eau Claire, Wis.* New diamond dresser has been made standard equipment on all Sterling drill grinders. Additional improvements include incorporation of a shifting lever in Model DA (used in Models DB and DV) to make it easier to change settings for different drill sizes from ¼ to 2½-in. dia. Micrometer drill feed available on all models (Dec 30, p123).

CARBIDE TOOL GRINDER—*Diamond Tool Co, South Haven, Mich.* Coolie-Grinderlap has 6-in. 60-grit roughing green wheel and 6-in. diamond finishing wheel, 325 screen, mounted on opposite ends of motor shaft. Tilt of worktables is controlled by compression spring. Model O1 weighs 60 lb and has 1/3-hp reversible motor. Model OX, 73 lb, is same machine with ½-hp motor (May 20, p204).

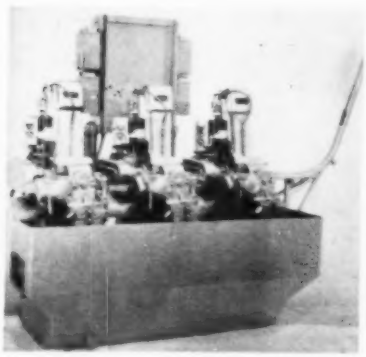


TAP SHARPENER—*Rockford Die & Tool Works, Inc, 1816 17th Ave, Rockford, Ill.* Series 60 tap sharpener will sharpen 4, 5, and 6-flute LH or RH taps. Series offers max collet capacity of 2¼ in. Head is quickly adjusted by knurled knob from 0 to 90° angle to grinding wheel. Equipped with 1½-in. collet, unit will accommodate any Hardinge 22-J collet to 2¼-in. capacity or equivalent (Feb 11, p166).

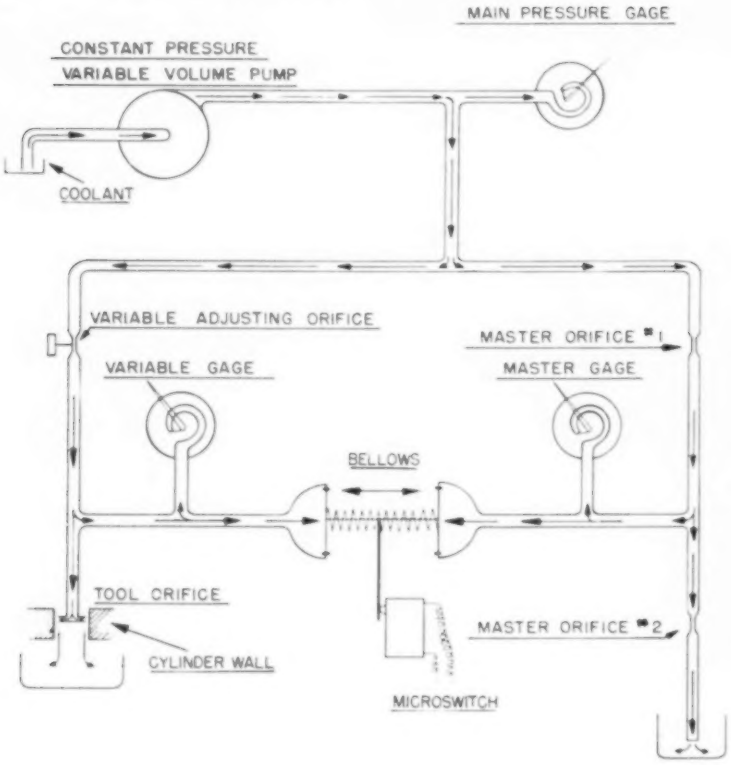
DIAMOND COLLECTOR—*Torit Mfg Co, Dept KP-1, Walnut & Exchange Sts, St Paul 2, Minn.* Collector is designed for installation in either a central collecting system or with unit-type systems and is adaptable to any type of diamond-wheel grinding, whether mist, wick, or dry grinding. Device operates on centrifugal separating principle. Price of completely equipped unit is $198.50 (Sep 9, p192).

DRILL GRINDING MACHINE — *Jersey Mfg Co, 407 Livingston St, Elizabeth, NJ.* Model SM-3 sharpens all types of drills under ⅛-in. diameter. Drill is clamped in holder and checked under microscope. Holder is designed to give absolute symmetrical sharpening of drills. Wheel truing attachment is built into the machine. Unit weighs 55 lb (Oct 21, p214).

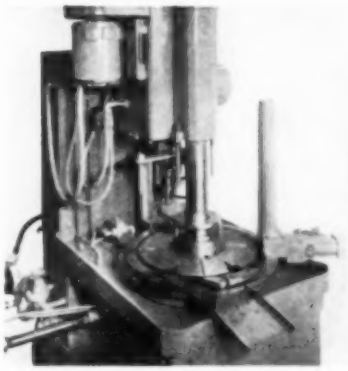
RUBBER CONTACT WHEELS—*Chicago Rubber Co, 651 Market St, Waukegan, Ill.* Wheels feature tire-flanged total disk assembly, are designed for use in a variety of finishing operations with abrasive belts. Wheels have 30% trade-in value when worn. Available in many sizes in plain or serrated faces, and in all hardnesses (May 6, p178).



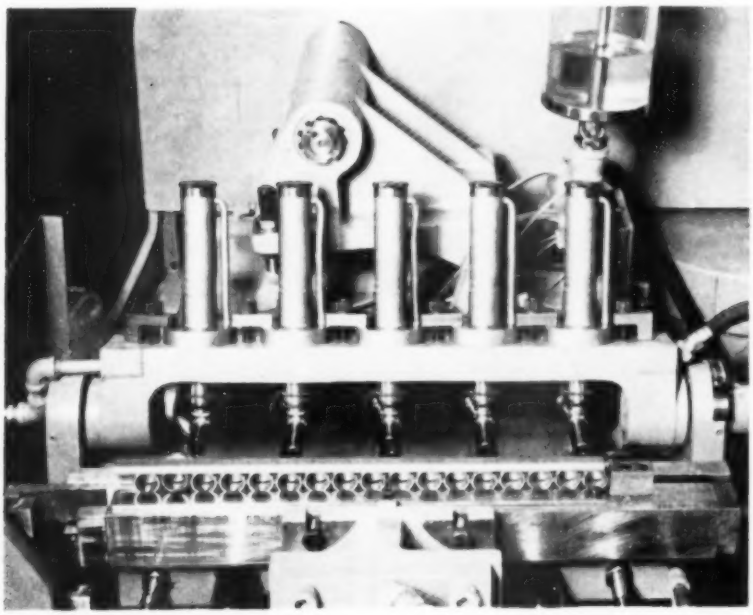
GRINDER—*Engelberg Huller Co, 831 W Fayette St, Syracuse 4, NY.* Typical grinding sequence on Engelberg Model LA-3, using series of progressively finer grit abrasive belts, is rough grind, finish grind, and fine polish. This wet-or-dry belt centerless grinder accommodates stock from 3/32 to 2¾ in. in dia, any length, and maintains tolerances of 0.001 in. or less, at through-feed rates up to 35 fpm (Mar 25, p191).



LIQUID SIZING SYSTEM — *Barnes Drill Co, 830 Chestnut St, Rockford, Ill.* Method for gaging honed bores is capable of automatically gaging diameters of bores throughout their full length as honing progresses. Back pressure, created by forcing coolant between tool and walls of cylinder, affects the expansion of bellows. As honing progresses, a point is reached where this variable pressure balances pre-set pressure on master gage. At this point, a microswitch is tripped to stop honing machine cycle (Aug 12, p162).



HONING MACHINES—*Barnes Drill Co, 814 Chestnut St, Rockford, Ill.* Model 10A1 vertical honing machine, designed for automatic honing of bores from ⅜ to 1-in. ID, has 10-in. swing, max spindle travel of 2½ in., and 6-in. lift-out stroke. Manual model, 10M1, has same capacity. Larger-capacity machines, 15A1 and 15M1, have ½ to 2-in.-ID range, 15-in. swing, max spindle travel of 6 in., and 8-in. lift-out stroke (Jul 1, p138).



MULTI-SPINDLE MICROHONER—*Micromatic Hone Corp, 8100 Schoolcraft Ave, Detroit 38, Mich.* Inner and outer raceways for ball bearings are microhoned on automated multiple spindle machines. Production on a 5-spindle Microhoner finishing No. 8 inner bearings is 500 rings per hr. Using 3 spindles for outer rings, production is 240 parts per hr (Apr 22, p184).

HONING TOOL—*Barrett Equipment Co, 21st and Cass Ave, St Louis 6, Mo.* Speedhone, with replaceable stones, will not fly apart when pulled from a cylinder while being driven by drill or drillpress. Micrometer tension adjustment increases stone life. Tool is designed for an operating range from 11/16 to 2 in. (Sep 9, p213).

MICROHONER — *Micromatic Hone Corp, 8100 Schoolcraft Ave, Detroit 38, Mich.* Micromatic 150 horizontal-type machine with stationary bridge has spindle mounted on reciprocating carriage; adjusting head is manually operated. Machine has 12-in. stroke and 1½-in.-dia capacity. Basic machine can be automated by addition of automatic hydraulic feed and stone-wear compensator; automatic coolant separator, pump and tank; automatic sizing unit (Mar 25, p190).

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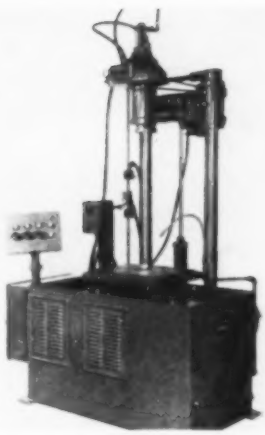
HONING MACHINE — *Micromatic Hone Corp, 8100 Schoolcraft Ave, Detroit 38, Mich.* Compressor parts are honed on Microhoning machine built for Tecumseh Products Co. Two piston bores are honed simultaneously on horizontal machines with two opposing spindles (Model 523-2); honing cycle is approx 18 sec, including fixture indexing time (Apr 22, p198).

HONING DEVICE—*Dow Mechanical Corp, Thompsonville, Conn.* Unahone can be used in almost any revolving spindle that will accept taper or straight-shank tools. Stone is advanced by drag placed on threaded sleeve while Unahone is revolving. Stone is retracted by reversing spindle while holding sleeve or by stopping machine and turning sleeve to max back position by hand (Apr 8, p174).

LAPPING MACHINE—*Distributed by Lincoln Industries Co, Minneapolis, Minn.* Unit laps carbide inserts and milling blades using readily available abrasive compound. Grinding time is preset with interval timer. Unit, which occupies 18 x 24-in. bench space, is supplied with one charge of abrasive, three toolholders, three weights, loading fixture, and power cord (Jul 1, p156).

WET-HONE MACHINE—*Clementina Ltd, 2277 Jerrold Ave, San Francisco 24, Calif.* Machine, which accommodates abrasives from 30 to 500 mesh, performs cleaning, deburring, honing and polishing operations. Model WH-4836 is 84 in. high, 48 in. wide, and 52 in. deep. Variance of operation is accomplished by changing pressure on regulator valve and changing abrasive (May 20, p210).

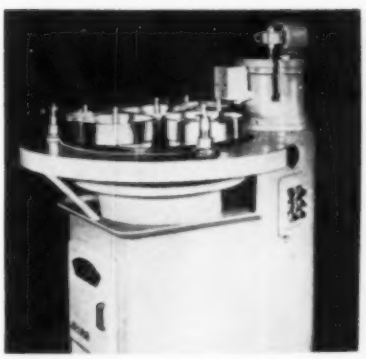


HONING MACHINE—*Superior Hone Corp, 1607 Elvreno St, Elkhart, Ind.* Model VA vertical honing machine has capacity of up to 4 in. in dia and 12 in. in height. Speed of V-belt-driven spindle is infinitely variable from 225 to 550 rpm. Adjustable limit switches control and set stroking lengths. Honing cycle is adjustable within range of 6 to 120 sec (Apr 8, p182).

MICROHONER — *Micromatic Hone Corp, 8100 Schoolcraft, Detroit 38, Mich.* Model 738 automatic machine generates a bore that is square with end faces on a part, to provide accurate locating surfaces for subsequent operations. Automatic loading, feeding, and aligning of parts is provided. When abrasive is completely worn down, or if a predetermined number of parts is not within tolerances, machine shuts down automatically (Feb 25, p194).

LAPMASTER TOOLING — *Crane Packing Co, Dept AMN, 6400 Oakton St, Morton Grove, Ill.* Combination lapping and conditioning rings are available for precision mechanical lapping of flanged faces of radial engine cylinder heads. Units replace standard conditioning rings on lap plate of machine (May 20, p232).

LAPPING MACHINE—*Engis Equipment Co, 431 S Dearborn St, Chicago 5, Ill.* Hyprez machine for lapping and refinishing of carbide or ceramic cutting tools features Meehanite lapping wheels that oscillate as they rotate—with a controlled variation of stroke from 0 to 1 in. Rotating wheel moves across edge of tool or insert while it is held firmly in a precise position (Aug 12, p170).



LAPPING MACHINE—*Spitfire Tool and Machine Co, 2931 N Pulaski Rd, Chicago 41, Ill.* Gyro-Matic 24 lapping machine, designed for production line precision lapping and finishing of all types of flat parts, features a 24-in.-dia anti-distortion lapping plate. Each of three workholder rings accommodates piece parts up to 9¾-in. dia. The amount of abrasive can be adjusted to meet specific requirements (Dec 16, p168).

ABRASIVE TANK—*Spitfire Tool Co, 2931 N Pulaski Rd, Chicago 41, Ill.* Detachable unit which minimizes machine maintenance and abrasive refill time is now standard equipment on Gyro-Matic 21 automatic lapping machine (Mar 25, p224).

AGITATOR TANK—*Crane Packing Co, Dept AMN, 640 Oakton St, Morton Grove, Ill.* Attachment for Model 24 Lapmaster lapping machine permits both coarse and fine lapping. Attachment utilizes coarse abrasive in one tank and fine abrasive in other (Mar 25, p226).

American Machinist

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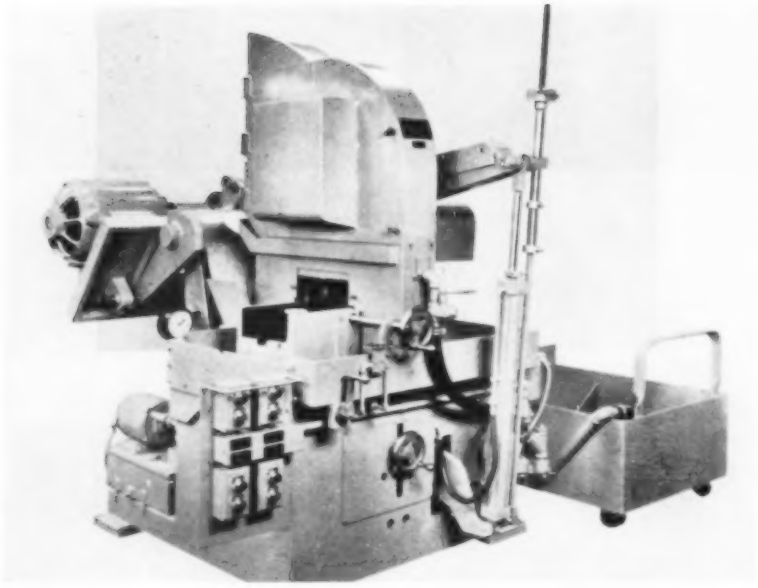
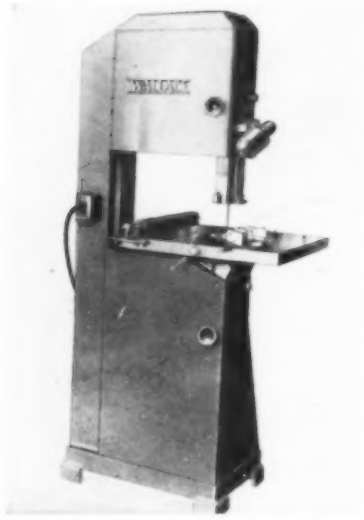
PRODUCTION PREVIEW

CUTOFF AND FILING



WET-ABRASIVE CUTTING MACHINE—*American Chain & Cable Co, Inc, Campbell Machine Div, 929 Connecticut Ave, Bridgeport 2, Conn.* Model 481 will cut any metal within its capacity of 8-in.-sq. solids. Unit is oscillating-type of machine in which wheel feed and work clamps are hydraulically operated and work is hand fed. Wheel is driven by 25-hp 1800-rpm motor (Feb 11, p160).

HSS BANDSAW BLADE—*L S Starrett Co, Athol, Mass.* Safe-Flex is said to retain hardness up to red heat temp of 1100 F. Thickness of bands range from 0.025 to 0.042 in.; units are available in regular, hook-tooth and skip-tooth types in four widths and in wide variety of pitches (Nov 18, p220).

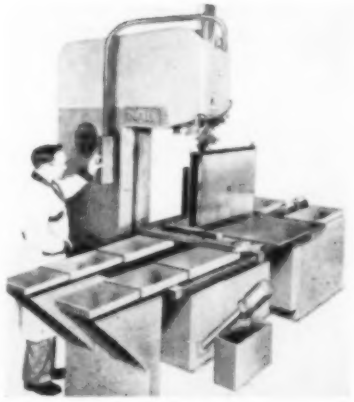


BANDSAW—*J D Wallace & Co, 800 N Detroit St, Warsaw, Ind.* Model 56 combination wood and metalworking bandsaw has max capacity of 12 in. under guide and 17¾ in. between saw blade and frame. Unit is available in straight belted drive suitable for wood and non-ferrous metals or in gear reduction model permitting cutting speeds from 50 to 3800 fpm (Feb 25, p196).

CONTOUR CUTTER—*DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* Model 5 Contour Machine has work capacity of 70 sq ft and is capable of taking a straight cut 14¼ ft long. Cutting and grinding mechanism is carried by an aluminum yoke housing all elements for the cutting and power feed. Between yoke and stationary member, which is fastened to floor, is an intermediate member. The three members are connected by hinges (Feb 25, p188).

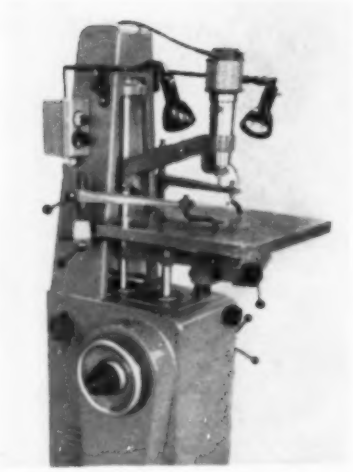
POWER HACKSAWS—*Sales Service Machine Tool Co, 2363 University Ave, St Paul, Minn.* Guide-bar support arm and guide bar on Keller power hacksaws have been redesigned to give greater rigidity. This permits more pressure to be applied to blade, thus reducing cutting time. Improvement has been incorporated into models 3B Dry Cut, 3C Wet Cut, 3CH Wet Cut, 4 Hy-Duty, and 5 Hy-Duty (Sep 23, p210).

CUTOFF SAW—*Imported by Eric R Bachmann Co, Inc, 27-11 41st St, Long Island City 1, NY.* Model KS 60 automatic circular cutoff saw (West German) has blades of 8¾ or 10½-in. dia, and is capable of cutting solid material up to 2⅜-in. dia and tubing up to 3¼-in. dia. Chucking of material, feed of bar, and feed of blade are hydraulically controlled. Gear changes permit speeds in 3 ranges from 39 to 1650 fpm (Mar 25, p225).

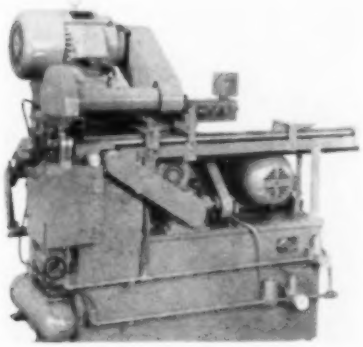


BAND MILL—*DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* Model 26-5 is designed to machine large blocks, and can be used for cropping, facing large billets, refacing or shanking forging die blocks, or ripping heavy plate. Machine has 2-in. throat, work thickness capacity of 18 in., and band velocities of 50 to 10,000 ipm. Feed mechanism provides feeding rates from 0.100 ipm to 10 fpm (Jun 3, p158).

TUBE AND BAR CUTTER—*Click Industrial Automation, 2385 Jerome Ave, New York 68, NY.* Machine has automatic feed and will cut ⅜-in. dia tube and 1/16-in. dia rod in brass, steel and plastics with accuracy of ±0.003. Unit is powered by two ¼-hp motors and compressed air (Feb 25, p204).



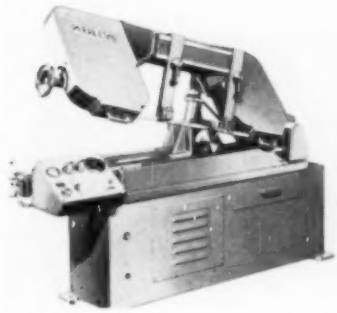
TOOLMAKING MACHINES—*Connecticut Tool & Engineering Co, Round Hill Rd, Fairfield, Conn.* Williams Roto Recipro toolmaking machine provides rotary and reciprocating motion simultaneously. Reciprocating motion is infinitely adjustable from 85 to 500 spm; rotary motion, up to 45,000 rpm. Work tables is 18 x 18 in. and can be tilted up to 10° in any direction. Depth of throat provides machining capacity to center of 22-in.-dia. workpiece (Nov 18, p192).



CUTOFF SAW—*Burke E Porter Machinery Co, 730 Plymouth Rd NE, Grand Rapids 5, Mich.* No. 163 cutoff saw is adaptable to round, square, or rectangular sections (solid or hollow) and can trim two bars simultaneously. Belt conveyor feeds stock forward to adjustable end gage; clamp lowers, saw lowers and raises, clamp releases, and finished parts drop as stock feeds forward for next cycle. Unit is capable of sawing 1¼-in. aluminum rounds at rate of 4200 per hr (Feb 25, p206).

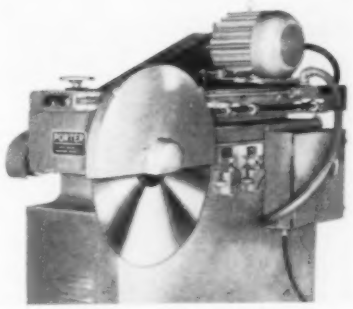
BANDSAW MACHINE — *Henry G Thompson & Son Co, New Haven 5, Conn.* Milford Rezistor Milband machine was produced by American Machine & Foundry Co and jointly developed by AMF and Thompson engineers. Blade speeds are adjustable from 40 to 360 rpm. The hydraulic operated stock vise has a standard capacity of 10 x 10 in. and permits adjustment for cutting angles up to 45°. An automatic indexing bar feed is available (Oct 21, p201).

GUIDE WHEEL—*Carter Products Co, Grand Rapids, Mich.* Zefyr guide wheel for bandsaw guides features lifetime lubrication sealed in with leak-proof metal and teflon seal. Wheel is produced in two sizes: No. 20, corresponding to trade size No. 0 for 8000 to 10,000 fpm; and No. 10, corresponding to trade size No. 1 for 10,000 to 12,000 fpm (Dec 16, p188).

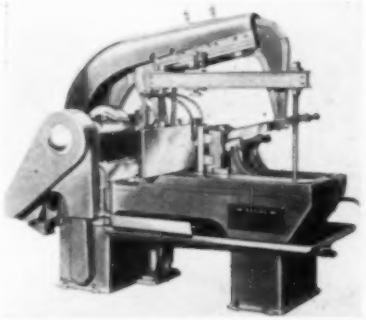


HIGH-SPEED BANDSAW — *Peerless Machine Co, Racine, Wis.* High-speed production bandsaw, designed to saw billets, heavy bars, pipe and structural shapes, is equipped with a compensating feed unit which automatically regulates blade pressure. Saw has a counterbalanced frame which protects the work, blade, and operator. All controls are located on single panel for operator convenience (Nov 18, p208).

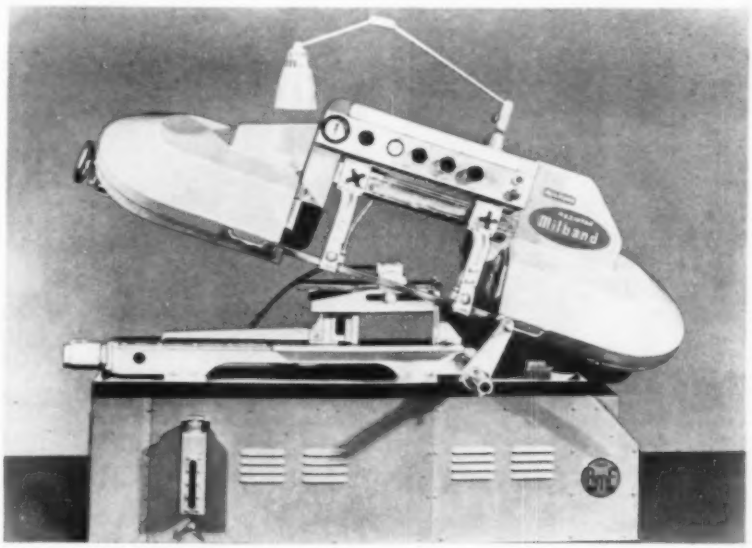
TUBE-CUTTING MACHINE — *Novi Tool & Machine Co, 25806 Novi Rd, Novi, Mich.* Tube cutter can cut tubes made of steel, copper, aluminum, and other metals, in sizes from ⅛-in. dia (max wall thickness 0.028 in.) to ½-in. dia (max wall thickness 0.045 in). Tubing can be cut to any predetermined length. Machine operates at 254 rpm (Sep 9, p185).



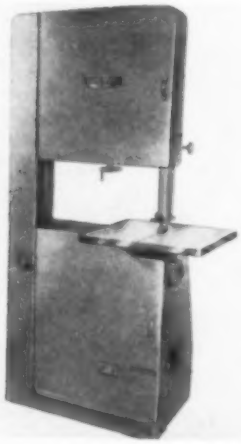
CUTOFF SAW—*C O Porter Machinery Co, 666 Front Ave NW, Grand Rapids, Mich.* Nonferrous automatic cutoff saw, Model 45 Hydracut, is available in two stroke sizes, 24 and 36 in., and features a hydraulically operated carriage adjustable for cutting and return-feed speeds of 0 to 55 fpm (Sep 23, p204).



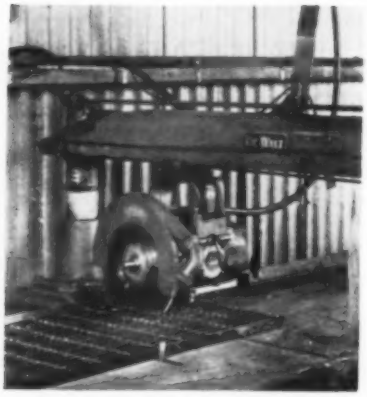
POWER HACKSAW — *Racine Hydraulics & Machinery Inc, Racine, Wis.* Hydraulically controlled Model 20-20 incorporates two-step poly-V-belt drive providing speed range of 35 to 115 spm. Table top is 31 in. from floor. Unit is particularly adaptable for cutting large size materials such as titanium alloys, solids cubing, pipe, and structurals (Aug 26, p176).



CUTOFF AND FILING



BANDSAWS—*W Whitney Stueck, Inc, Old Saybrook, Conn.* Model A-24-S is single-speed unit (anywhere between 1860 and 6000 fpm) for wood, plastic, non-ferrous metals. Model A-24-3 offers 3 speeds: 150 fpm for heavy mild steel, 640 fpm for stack-sawing galvanized sheets, and 4870 fpm for lighter materials. Model A-24-V features 2-range variable-speed drive: 58-173 fpm for tool steel and heavy mild steel; 244-730 fpm for heavy non-ferrous materials and galvanized steel sheets; and 1822-5460 fpm for lighter materials (Feb 25, p204).



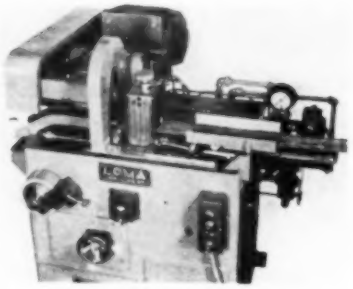
PANEL CUTTING MACHINE — *DeWalt Inc, Lancaster, Penna.* Machine consists of two vertical columns with a common cross-arm which carries cutting member. Machine can be used for cross-cutting, bevel-cutting and ripping work on wood, metal, and composition board. Unit is capable of 62-in. cutoff stroke and is available in models ranging from 3 to 10 hp (Sep 9, p120).

RADIAL ARM SAW—*DeWalt Inc, Lancaster, Penna.* Imperial line of radial-arm wood and metal cutting machines features a max 16⅞-in. rise between table top and motor bottom. Control handle simultaneously unlocks arm while disengaging locating pin for changes from cutout to miter positions. Electronic brake stops the blade approx 20-25 sec after shut-off (Oct 21, p212).

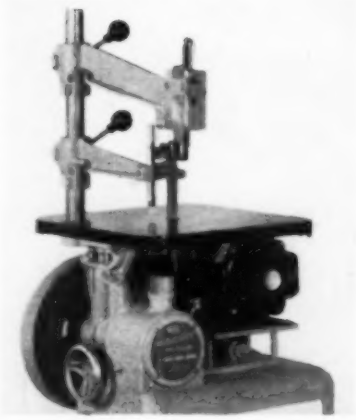
CARBIDE CUTOFF BLADE — *Gay-Lee Co, Clawson, Mich.* Solid-carbide circular cutoff blade for automatic screw machines provides a chamfering edge in addition to the cutoff edge. Work can be cut off in either direction of rotation because a portion of the blade is gashed to allow clearance. Tool is available with OD's from 1¾ to 3 in. and normal thicknesses (Dec 16, p180).

CUTOFF MACHINE—*Walter P Hill, Inc, 22185 Telegraph Rd, Detroit 19, Mich.* Designed to produce accurate, burr-free lengths of nonferrous tubing at high production rates, automatic cutoff machine can be equipped with accessories which will permit straightening, tempering, and round-forming of tubing from coiled stock. A hopper feed for tubes up to 20 ft long is also available (Dec 16, p167).

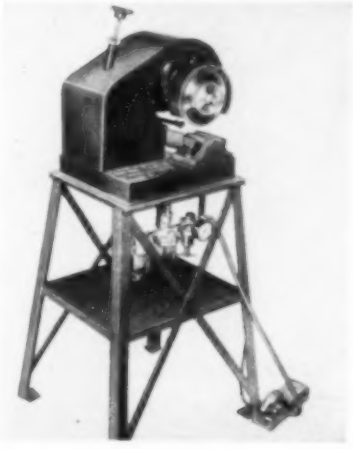
FILING MACHINE — *Distributed by Newage Industries, Inc, Jenkintown, Penna.* Rindis filing machine, made in England, is designed for filing, trimming, and deburring a wide variety of small components. Disks and rings with different tooth patterns are provided for use at different speeds and on different materials. Disks cut without heat, and need no coolant or abrasive (Jul 15, p201).



CUTOFF SAW—*Loma Machine Mfg Co, Inc, 114 E 32nd St, New York 16, NY.* Circular cutoff saw cuts to length nonferrous tubes and rods from ¼ to 4 in dia. Feature of unit is swinging-arm design that causes oscillating movement of sawblade. This facilitates multiple strand sawing; as many as ten pieces can be cut simultaneously. Unit handles cutoff lengths up to 12 in.; blade has peripheral speed of about 10,000 fpm (May 6, p176).

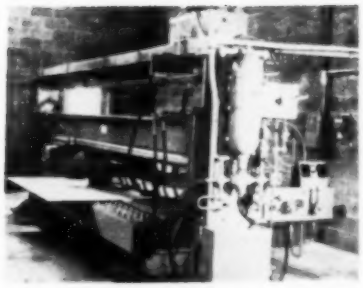


DIE FILER—*Rice Pump & Machine Co, Belgium, Wis.* Milwaukee die filer, Model FS-VSS, features infinitely adjustable speed and stroke lengths. Speeds from 100 to 475 spm and stroke lengths from 0 to 2 in. are available. Choice of three sizes of 4-way tilting tables, and a rapid zeroing adjustment for the tables speed operations (Dec 30, p126).



ROTARY CUTOFF MACHINE—*Continental Machine Co, 1952 N Maud Ave, Chicago 14, Ill.* Air-operated machine is designed to handle pipes and tubes ranging from ¾ to 1¼-in. OD and with wall thicknesses up to 16 gage. Production is as high as 2000 pieces per hr. Operator feeds pipe or tube to preset stop, touches air-valve foot switch and the rotary blade descends at desired cutting speed (Sep 23, p194).

METAL SAWING MACHINE—*Peerless Machine Co, Racine, Wis.* Speedy-Cut 6 x 6-in. metal sawing machine features variable speed drive, providing speeds of 50 to 140 spm. Compensating feeding mechanism automatically adjusts itself to the size and shape of the work. Maximum capacity is 6¾ x 6¾ in.; for 45° cutting, 4 x 6¾ in. Blade is 14 in. long and has a 5½-in. stroke (Nov 18, p200).

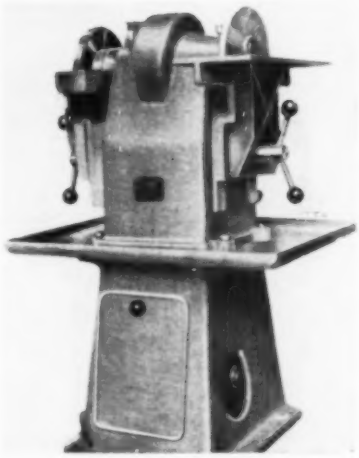


CUTTING MACHINE—*Stone Machinery Co, Inc, Manlius, NY.* Model T-20 hydraulically operated traverse-type cutting machine has a cutting head which may be operated laterally at any speed from 0 to 50 fpm and raised or lowered at rates of 0 to 10 fpm. Standard wheel dia is 20 in.; arbor speed is 2360 rpm. Machine is 21 x 8 x 8 ft, has a 12-ft length of cut and a 24-in. vertical adjustment (Dec 2, p151).

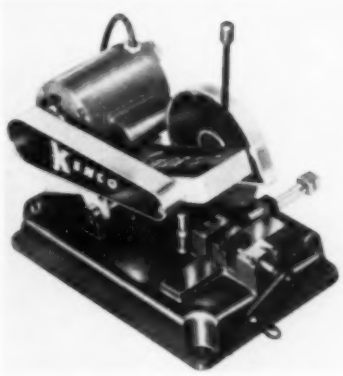
POWER SAW—*DoAll Co, Des Plaines, Ill.* Model C-12 has work capacity 12 x 12 in. in size, 1500 lb in weight; blade speeds of 90, 125, 180, and 250 sfpm. Accuracy of cut is 0.002 per in. of dia; typical cutting rates are under 2 min for 5-in. round of mild steel, 5 min for 3½-in. square of 18-8 stainless, 19 min for 11¾-in. round of oil hardened tool steel (Apr 22, p184).

TUBULAR METAL LEGS — *Continental Machine Co, 1952 N Maud Ave, Chicago 14, Ill.* Model 3D automatic cutoff unit handles straight, tapered, and step metal tubes. Machine cuts minimum of 5000 tubes that are tapered from the middle, producing a total of 10,000 or more tapered legs a day. Tubes are automatically fed to drilling heads that deburr, face and drill any hole size desired in leg ends (Aug 26, p168).

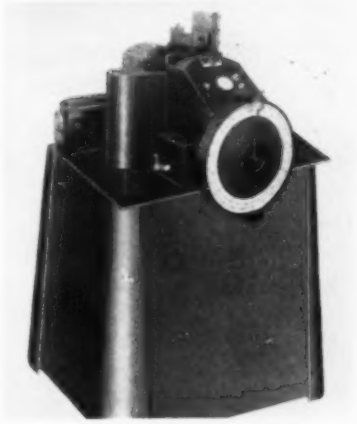
BANDSAW—*Imported by S & S Machinery Co, 140 53rd St, Brooklyn 32, NY.* Midsaw Tridaulic bandsawing and bandfiling machine (British) is capable of cutting materials ranging from armor plate to corrugated paper, and has speed range of 45 to 10,000 fpm. Speed is infinitely variable and hydraulically controlled. Standard model comes with 36- and 48-in. depth of throat with 20-in. vertical capacity under saw guides (Apr 22, p193).



FILING MACHINE—*Jersey Mfg Co, 407 Livingston St, Elizabeth, NJ.* Disk filing machine may be equipped with two disks ranging in size from 3¼ to 12 in. For cutting non-ferrous metals, disks are offered in carbon steel. For ferrous metals, disks of HSS or carbide can be provided. Machine turns disks at 5 standard speeds: 175, 250, 310, 370, and 410 rpm (Jan 14, p163).



CUTOFF SAW—*Kenco Mfg Co, 5211 Telegraph Rd, Los Angeles 22, Calif.* Kenco cutoff saw, with capacities of ¾-in. steel barstock and 1¼-in. nonferrous barstock, reportedly can be set up for any run in only 1½ min. Vise holds work positively and in exact position. Unit requires 1-hp motor; sells for less than $300 (May 6, p186).



CUTOFF MACHINE — *Durant Tool Supply Co, 1-15 Thurbers Ave, Providence, RI.* Designed to handle either wire or flat stock, machine has capacity of up to 3 in. in width and from 2 in. to 30 ft in length for each cut. Range of feeds is infinitely adjustable. Cutoff length tolerances range from ± 1/64 in. for the smaller lengths to ± 1/16 in. for the long pieces. Price is $2150 (Dec 30, p132).

ABRASIVE CUTTING MACHINE — *Wallace Supplies Mfg Co, 1304 Diversey Parkway, Chicago 14, Ill.* Machine called "Roll-A-Round" Cut machining unit, cuts as cutting head rotates about work. It is available in two stock sizes: for 6⅝-in.-OD hollow sections or such shapes as will fit into a 6-in. circle, and for 12⅝-in.-OD hollow sections (such as pipe or tube) as well as sections which will fit into a 12-in. circle (Oct 7, p168).

BANDSAW GUIDE—*Carter Products Co, Inc, Grand Rapids, Mich.* Carter Guidall 400 is reported to be first guide that has edge of the blade riding on the outside perimeter of thrust wheel and with thrust and support rollers all operating on the inner raceway of bearing. Unit for blade speeds up to 15,000 rpm handles thrust loads of 175 lb at max speeds and 500 lb at lower speeds (Oct 21, p226).

American Machinist

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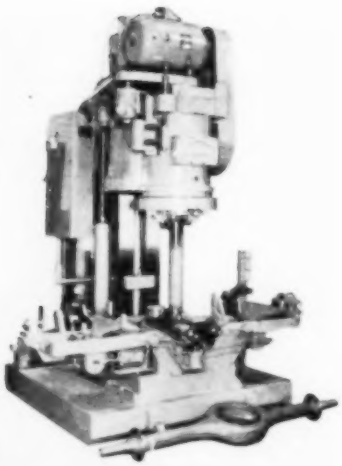
PRODUCTION PREVIEW

SPECIAL MACHINES



COMPRESSOR CRANKCASES — *Ex-Cell-O Corp, 1200 Oakman Blvd, Detroit 32, Mich.* Air conditioner parts are machined on 8-station rotary indexing machine which performs more than 20 operations including rough-boring, counter-boring, facing, spot-facing, drilling, chamfering, and tapping (Feb 11, p164).

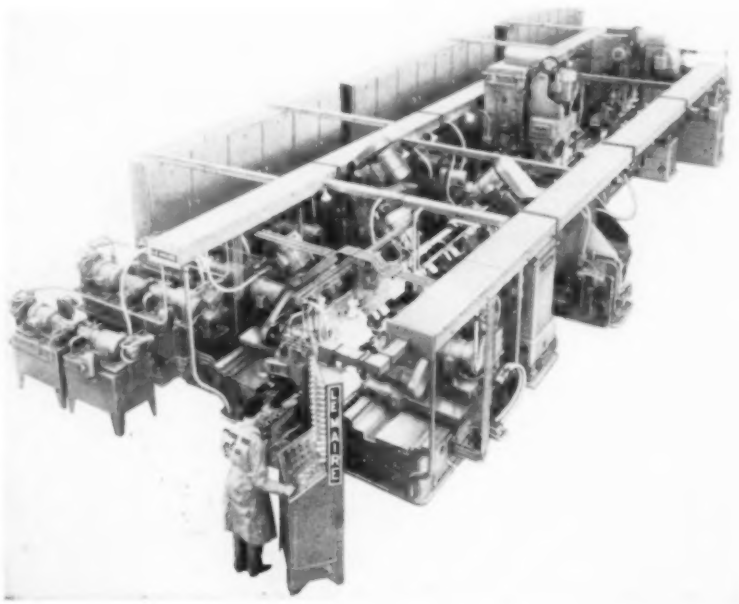
AUTOMOTIVE PISTONS — *LaSalle Tool Inc, 3840 E Outer Dr, Detroit 34, Mich.* Pistons are produced on automated line at rate of 400 per hr. Units combine 5 stations in dial-type machine with 9 stations in an in-line machine. Operations include milling, piercing, facing, chamfering, gaging, weighing, classifying by OD (Feb 11, p162).

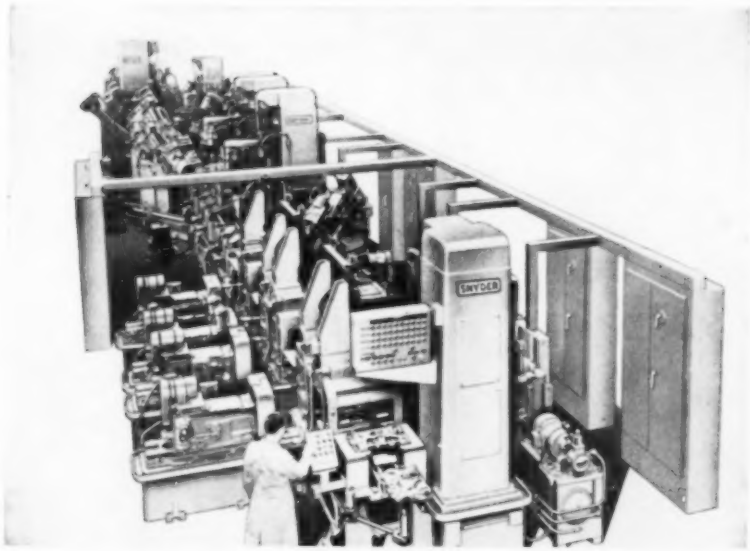
REAR AXLE SHAFTS—*Seneca Falls Machine Co, Seneca Falls, NY.* Shafts are machined and gaged in setup consisting of four Model AR Automatic Lo-swing lathes, gaging station, work transfer and loading equipment, conveyor lines, and mechanized chip conveyor. Production on each machine is timed for 180 shafts per hr at 100% efficiency (May 6, p182).

TRANSFER MACHINE — *LeMaire Machine Tool Co, 2672 S Telegraph Rd, Dearborn, Mich.* 25-station machine is designed to machine V-8 engine intake manifolds at rate of 65 per hr at 100% efficiency. It can also handle truck engine manifolds for a two-barrel carburetor as well as a four-barrel manifold. Building block construction permits interchanging of machine elements to meet product modifications (Dec 30, p123).

WHEEL RIMS—*Hautau Engineering Co, 721 Wanda, Ferndale 20, Mich.* Rims are embossed, pierced and chamfered on 5-station work handling machine consisting of three 50-ton hydraulic presses and an in-line transfer mechanism. Approximately 400 rims per hr are produced (Feb 25, p202).

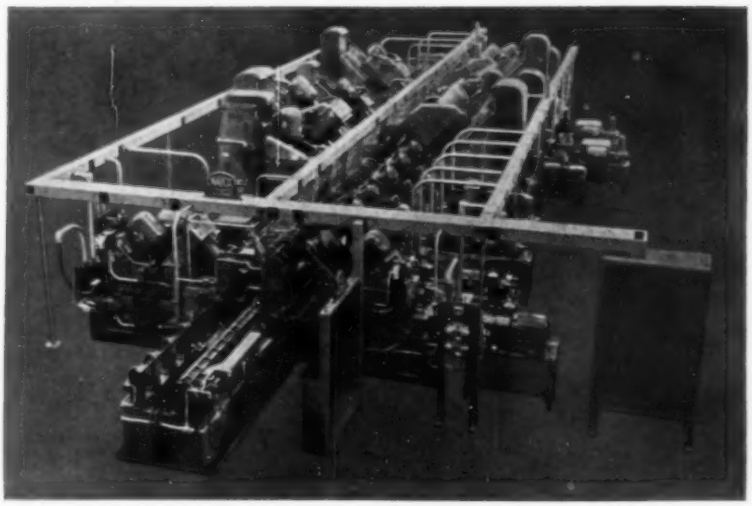
BASIC MACHINE—*Baker Brothers, Inc, Toledo 10, Ohio.* Machine makes even cut across face of rear axle housing. Hydraulic clamping fixture holds both ends of housing; gage locates center, swings out of way, and facing begins. Machine handles four different size housings, and reportedly turns out 34.2 pieces per hr at 100% efficiency (Mar 11, p188).





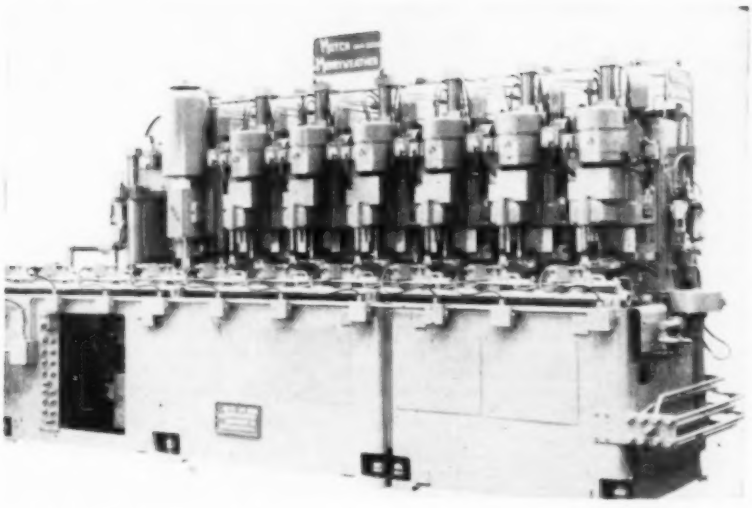
ENGINE MANIFOLDS—*Snyder Tool & Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Automotive engine intake manifolds are machined in 175-ft segmented transfer machine line which accepts piece as rough casting and turns out finished part. Line consists of two milling lines which operate in parallel and a drilling section. Production is 136 manifolds per hr (Sep 9, p194).

STEERING-GEAR BALL NUTS — *Snyder Tool & Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Nuts are drilled, reamed, countersunk, and chamfered on 16-station center-column machine at rate of 311 per hr. Unit has 96-in.-dia index table; tooling consists of two 3-spindle, two 9-spindle, one 12-spindle, and one 18-spindle vertical head (Feb 11, p176).



TRANSMISSION HOUSINGS—*Motch & Merryweather Machinery Co, 888 E 70th St, Cleveland 3, Ohio.* Special unit performs milling of two surfaces, drilling, rough-boring, and reaming on 27 parts per hr. After milling, three holes are drilled in one side and cored opening at neck of case is rough-bored on opposite side. Table advances to final station, where 3 holes are reamed (Feb 11, p172).

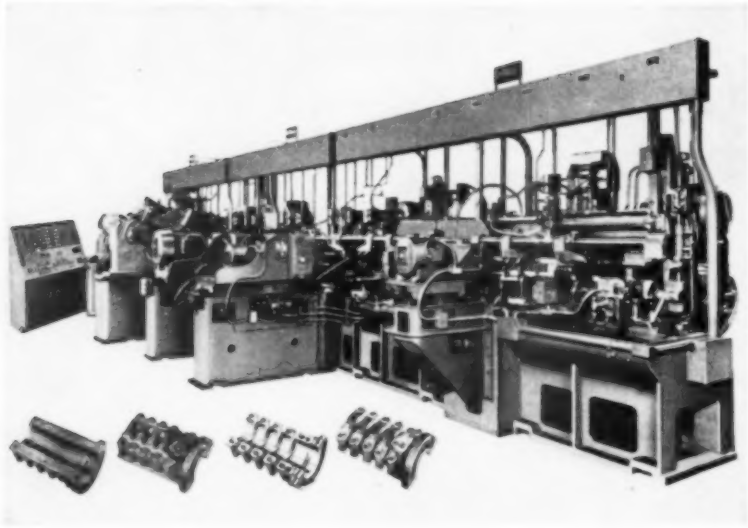
CYLINDER BLOCKS—*National Automatic Tool Co, Inc, Richmond, Ind.* Cylinder blocks are processed in 21-station Holeway transfer machine. Total of 56 drilling and reaming operations are accomplished as parts pass through stations—1 loading, 13 machining, 3 idle, 1 rotating, 1 inspection, 1 chip dumping and 1 unloading. Production rate is 120 blocks per hr (Sep 23, p200).



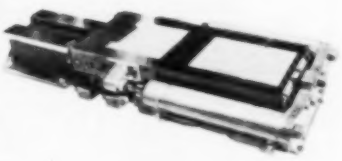
ECONOMATIC MACHINE — *Buhr Machine Tool Co, Ann Arbor, Mich.* Automatic transmission extensions are machined at rate of 180 per hr on 25-station Economatic. Two different parts are automatically positioned and clamped in palletized fixtures. Unit performs 30 operations including drilling, tapping, rough and finish boring, assembly of liners, automatic gaging, milling and facing (Apr 8, p184).

GAGING AND TRANSFER MACHINE—*Federal Products Corp, 1144 Eddy St, Providence 1, RI,* Unit checks 20 ID's on automotive engine blocks, 2 each in five crankshaft bores and 2 each in five camshaft bores. If size limits are exceeded, block is shunted out of line. Handling, positioning, and control portions of machine are made by Ingersoll Milling Machine Co, Rockford, Ill (May 20, p200).

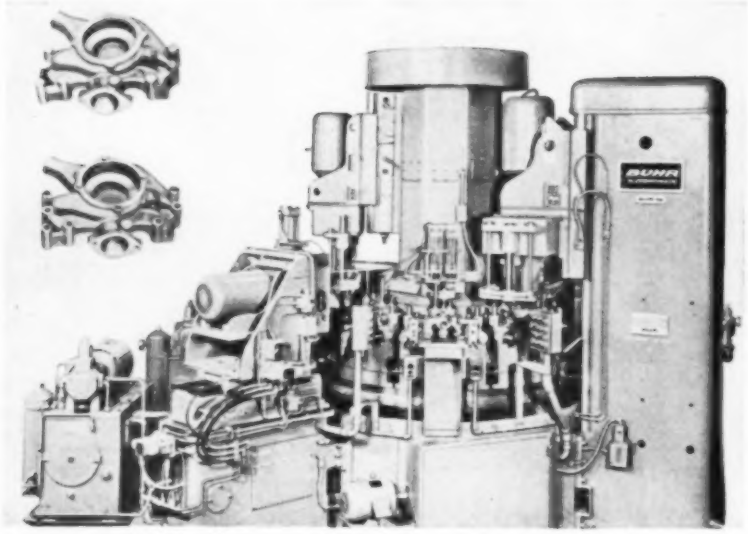
AUTOMOTIVE PISTONS—*Motch & Merryweather Co, 888 E 70th St, Cleveland, Ohio.* Pistons are drilled, reamed, and milled on 11-station in-line transfer machine. Transfer is accomplished by hydraulically operated transfer fingers and a reciprocating transfer bar. Machine is capable of automatically machining 650 pistons per hr (Jul 1, p136).



BEARING CAPS—*LaSalle Tool, Inc, 5840 E Outer Drive, Detroit 34, Mich.* Engine bearing caps are produced from single casting on 20-station, fully automated machine at rate of 450 finished caps per hr. Unit mills, drills, reams, spotfaces, countersinks, counterbores, and taps before unloading finished bearing caps (Apr 22, p196).



HYDRAULIC SLIDE—*Baker Brothers, Inc, Toledo 10, Ohio.* Model 1215 is one of series of standard automation components. Other items include 15-hp drive box, and Porta-Pak hydraulic feed unit. Designed to fit company's basic machines, components are said to take "specialness" out of automation (Jul 15, p194).



PUMP HOUSING — *Buhr Machine Tool Co, Ann Arbor, Mich.* Economatic machine was specifically built to perform 55 operations on an automative water-pump housing — 1 milling, 18 drilling, 10 reaming, 7 chamfering, 10 tapping, 7 spotfacing and 2 boring operations. Production is 102 parts per hr. Automatic index unit which drives table can be removed without disturbing rest of machine (Aug 12, p172).

VANE-GENERATING MACHINES—*Nationwide Engineering Service, Inc, Machine Tool Div, Culver City, Calif.* Machines reportedly reduce direct labor costs by as much as 90% in machining jet engine compressor or blower blades. Model 6-6-720-P has work capacity of 6-in.-max dia, 6-in.-max length, 720°-max rotation. Max lead angle is 45°, max cutter dia is 0.250 in. (Aug 26, p158).

TRANSMISSION CASES — *Snyder Tool & Engineering Co, 5400 E Lafayette, Detroit 7, Mich.* Cases are drilled, spotfaced, chamfered, reamed, line reamed, tapped, milled, and bored on 53-station, 62-ft-long machine. Machine is hydraulically operated, electrically controlled, has three in-process gaging stations, and turns out 80 cast-iron gear cases per hr (Jun 17, p204).

STEEL ELBOWS—*Baker Bros, Inc, Toledo 10, Ohio.* Parts are faced and chamfered on both ends simultaneously in horizontal 2-way index machine, which produces 146 per hr on 1-in. elbows and 27 per hr on 4-in. size. Electric-powered index table has two positions. Operation is automatic, with operator loading and unloading (Jan 14, p172).

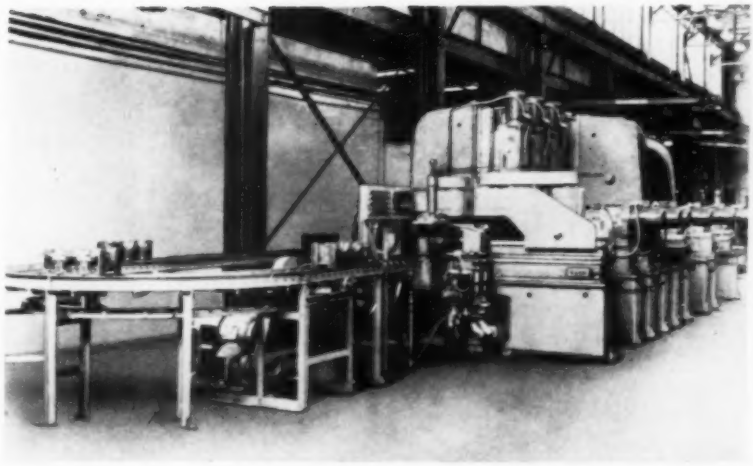
TRANSFER MACHINES—*Ferguson Machine Corp, Roller Gear Div, P O Box 5841, St Louis 21, Mo.* Straight-line transfer machines are available with strokes of either 6, 8, 12, 16, or 24 in. and with choice of two types of carriers in various sizes. Standard lengths are 10, 14, and 18 ft. Base alone is provided, tooling is added by user, unless complete machine is desired. (Mar 25, p189).

AUTOMOTIVE CRANKSHAFTS — *Standard-Modern Tool Co, Ltd, Toronto, Canada.* 11-station transfer machine, performs 36 drilling, reaming, milling, facing, boring, chamfering, and tapping operations on crankshafts. Production rate is 48 shafts per hr at 80% efficiency. Machines are equipped with motorized chip conveyors and magnetic separation type coolant system (Apr 8, p180).

PISTONS—*Modern Industrial Engineering Co, 14230 Birwood Ave, Detroit 38, Mich.* Automatic transmission pistons are machined on 2-station Burr-Master machine which countersinks 20 blind holes. Parts are semi-automatically positioned and manually changed. Indexing is automatic, and production rate is 200 parts per hr (May 6, p188).

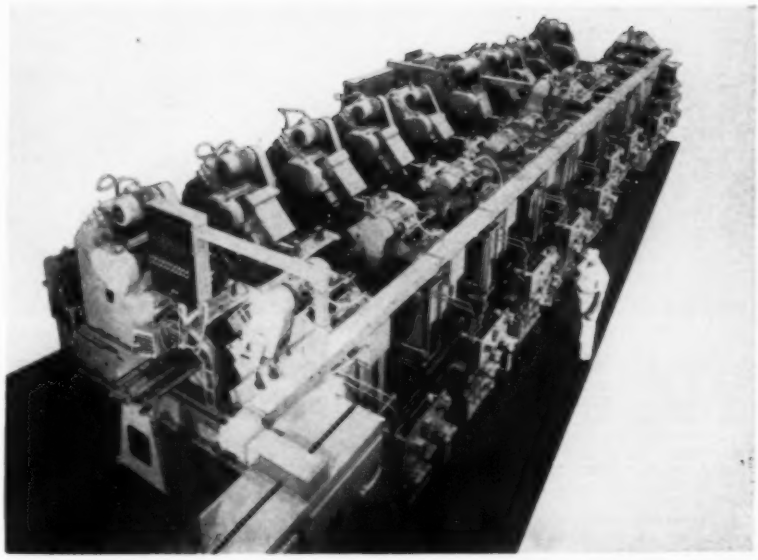
CONNECTING RODS—*Greenlee Bros & Co, Rockford, Ill.* Rods are machined on 3-way, 4-station, horizontal, automatic indexing machine which produces 84 rods per hr at 100% efficiency. Wrist pin holes are drilled and cap side of crankshaft hole is bored; rod end of hole and bolt bosses are bored; wrist pin holes are semi-finished reamed and cap and rod are separated (Feb 25, p206).

PUMP COVERS—*Avey Drilling Machine Co, Cincinnati 1, Ohio.* Covers are rough and finish milled, drilled, countersunk and tapped on transfer machine that handles 360 pieces per hr. Operations include automatic gaging, probing, and insertion of bronze bushing in bore. Operator loads two parts on each platen-type fixture, which is automatically clamped, unclamped, and returned to loading position (Apr 8, p174).

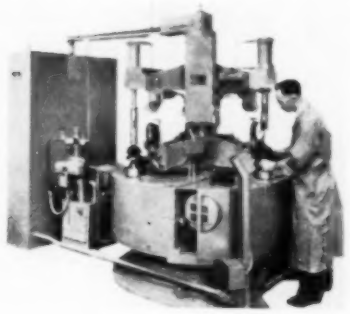


AUTOMOTIVE-PISTON PIN HOLES—*Hole Engineering Service, PO Box 1877, Detroit 19, Mich.* Automatic work-handling machine advances four pistons at a time under locating unit which rotates them to place pin hole at right angles to conveyor. Next station inserts holder between pin-hole bosses, and four "Bearingizers" are passed through pistons and withdrawn. Successive indexes position pistons for unloading (Jan 14, p165).

AUTOMOTIVE CARBURETOR BODIES—*Morris Machine Tool Co, 923-16 Harriet St, Cincinnati 3, Ohio.* Bodies are machined at rate of 1 every 7½ sec on inline transfer machine which incorporates 25 standard units made by company: 14 No. 1 Cam-matic, 7 No. 2 Cam-matic, and 4 Air-Oil-Matic Morris drill units. These perform 31 drilling, 19 boring, 10 reaming, 4 gaging, 13 probing, and 13 tapping operations (Mar 11, p182).



ENGINE BLOCKS—*Moline Tool Co, Moline, Ill.* Blocks are processed on this 10-unit transfer-type machine. As each block passes through line, the 8 cylinders are rough bored, semifinished bored and counterbored and both ends of each cylinder are chamfered. All functions are tied together electrically, control is centralized in one push-button station near feeder station (Oct 21, p224).



BEARING LOCKNUTS — *Standard-Modern Tool Co Ltd, 373 Front St, East, Toronto, Canada.* Parts for pinion shaft in automobile rear end assembly are automatically pre-loaded and torque tested on unit which has torque limits of 18 to 24 in.-lb. Machine tightens locknut, checks preload torque on tapered roller bearings. Three stations turn out 240 assemblies per hr (Jan 14, p177).

SCREW SLOTTING MACHINE—*Roy Machinery & Sales, Inc, New Britain Ave, Farmington, Conn.* Machine handles screw blanks from No. 2 to 5/16 in. (nominal) up to 2½ in. long. Complete changeover from one screw size to another takes 15 min. Unit is equipped with a variable-speed rotary hopper feed. HSS inserts provide economical deburring (Dec 30, p141).

AUTOMOTIVE PARTS — *Govro-Nelson Co, 1931 Antoinette, Detroit 8, Mich.* Special unit incorporates five Govro-Nelson automatic drilling units, together with power saw. Unit drills, taps, taper reams, slots, and deburrs work, performing 6 operations on 700 automotive parts per hr (Feb 11, p183).

FORGED STEERING KNUCKLES—*Baker Bros, Inc, Toledo 10, Ohio.* Knuckles are machined on 5-station trunnion-type machine at rate of 52 per hr. Machine performs core drilling and reaming in completely automatic cycle. Full-reduction heads are mounted on company's Model 1830 standard slides (Feb 11, p174).

STEERING KNUCKLES — *Snyder Tool & Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Forged steel pieces are milled, drilled, spotfaced, tapped, and reamed on 60-ft long, 26-station segmented palletized transfer machine at rate of 146 pieces per hr. Machine is hydraulically operated, electrically controlled (Mar 25, p194).

AXLE HOUSINGS — *Snyder Tool & Eng'g Co, 3400 E Lafayette, Detroit 7, Mich.* Tractor drive-axle housings of three different types are machined on low-production, line-index type machine which performs 40 drilling, boring, turning, and tapping operations. Production rates range from 8.5 to 10.2 parts per day (Sep 23, p202).

CRANKSHAFTS—*Snyder Tool & Engineering Co, 3400 E Lafayette, Detroit 7, Mich.* Crankshafts are drilled, bored, chamfered, reamed and tapped on 13-station 4-segment transfer machine designed to maintain concentricity of tapped holes with bored center hole. Machine produces 112 pieces per hr (Mar 25, p202).

American Machinist

1958

PRODUCTION PREVIEW

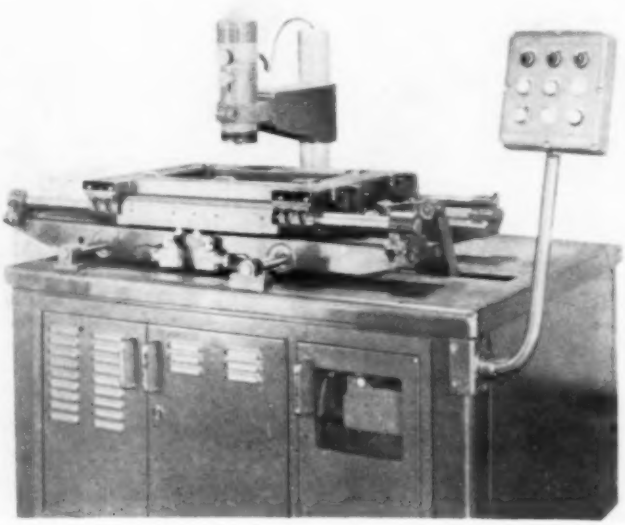
AUTOMATIC MACHINE CONTROL

NUMERICAL CONTROL SYSTEM—*Pratt & Whitney Co, Inc, West Hartford 1, Conn.* System permits automatic accurate positioning within .0001 in. when applied to company's line of jig borers, vertical hole grinders and rotary tables. Pneumatic sensing system is heart of tape reader. Measuring system is made up of several digital-to-analog converters with proper bench marks for refining accuracy as successive settings are made (Mar 11, p174).

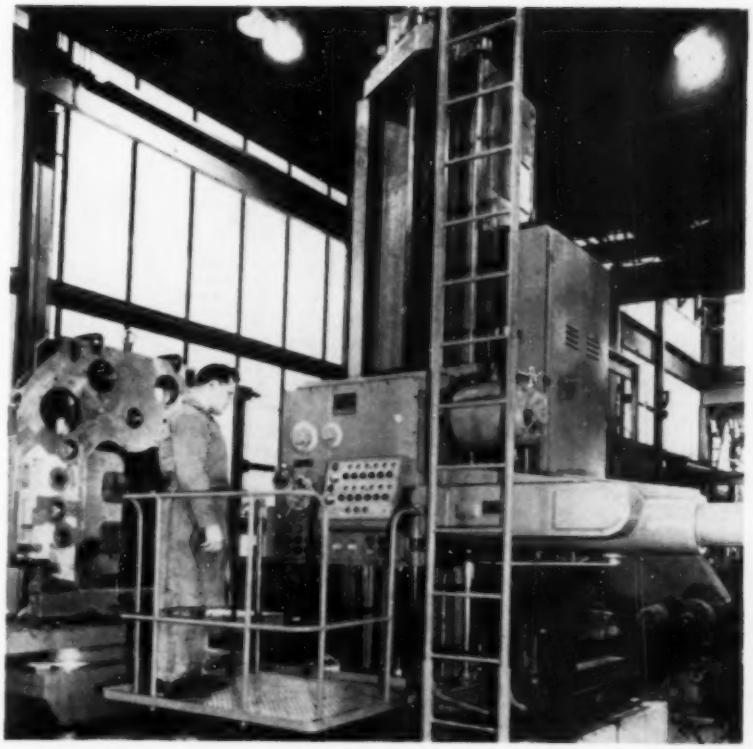
DUPLEX CYCLING TIMER—*Cramer Controls Corp, Centerbrook, Conn.* Timer, type 742, can be used to control a wide variety of production machinery or perform a large number of in-plant functions automatically. Adjustment on each timer is independent of the other, providing maximum flexibility. Standard time ranges list 11 choices from 6 sec to 24 hr (Oct 7, p174).

POWER TRANSMITTER—*Diehl Mfg Co, Finderne Plant, Somerville, NJ.* Type J power transmitter is solenoid-controlled unit that permits remote or automatic control for rapid stop-start machine operation. 40 or more starts per min are possible when transmitter drives machines with reasonably low inertia. Unit is offered in several ratings up to 2 hp, for 1, 2, or 3-phase operation (Apr 8, p188).

CONTROL SYSTEM—*Daytronic Corp, 216 S Main St, Dayton 2, Ohio.* Electronic system of automatic gaging, sorting, or size control, accomplished with Model 100 displacement transmitter and Model 562 limit controller, is adaptable to machine tool control to produce parts of predetermined size. Input can be programmed from punched cards or other data storage devices (Jul 1, p136).



NUMERICAL CONTROL SYSTEM—*Laboratory for Electronics Inc, 75 Pitts St, Boston 14, Mass.* Control system called Digital Positioning uses digital techniques both in straight-through portion and feedback loop. Electronic components are adaptable to machines in which positioning of work or tool to given spot is desired. These include automatic welders, punches, stampers, and drillpresses. Instructions are read from punched tape (Jul 29, p144).



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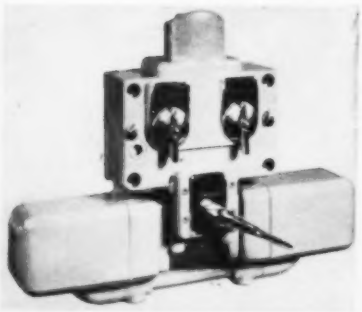
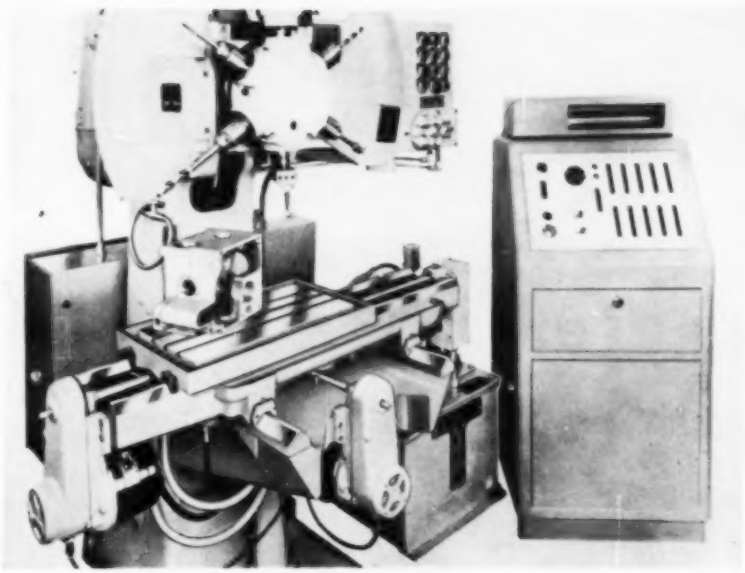
AUTOMATIC CONTROL—*Giddings & Lewis Machine Tool Co, Kaukauna Machine & Foundry Div, Kaukauna, Wis.* Kaukauna Automatic system is designed to operate standard machine tools through manual control, through dial control of discrete digital dimension information or through 8-channel binary code punched tape. A selection switch in control panel permits switching to different control methods. Digital control system is made by Farrand Controls, Inc, New York, NY (Nov 4, p182).



AUTOMATIC CONTROLS — *Vickers, Inc, Box 302, Detroit 32, Mich.* Traverse and feed panels for control of industrial oil-hydraulic systems are available for control of drilling, boring, milling, and grinding machinery. Series CPP consists of flow-control valve section combined with solenoids; Series CPN, flow-control valve section with manual operating lever (Jan 14, p170).



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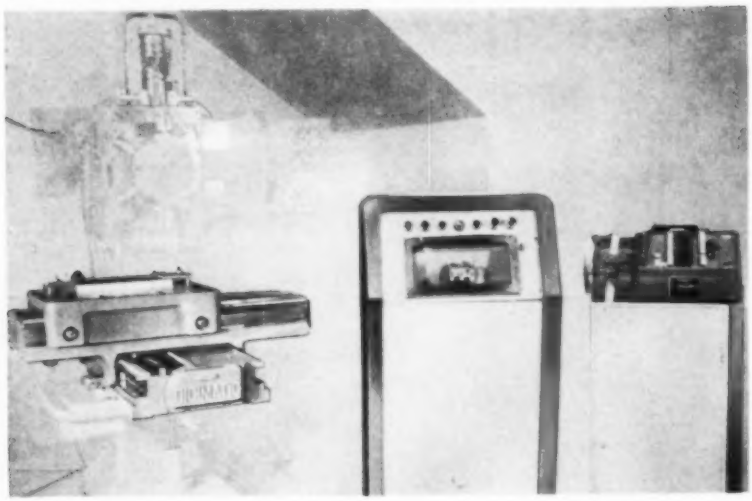
TAPE-CONTROLLED TABLE—*Burg Tool Mfg Co, Inc, Gardena, Calif.* Completely automatic tape-controlled table can be used with company's 6-(Model 2BH) or 8-(Model 3BH) spindle turret drill. Each spindle is controlled individually by standard Burgmaster in speed, feed, precision depth control, rapid approach and return. Selection of six or eight spindles and table position are programmed on tape (Aug 26, p156).

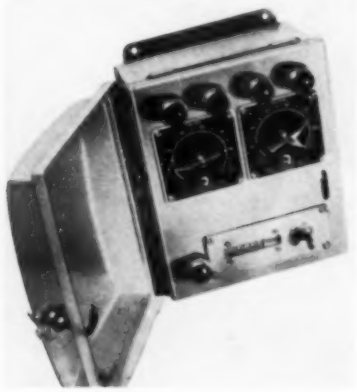
PANELBOARD SYSTEMS — *Devco Engineering Inc, PO Box 387, Caldwell, NJ.* Completely assembled panelboard or console systems are designed for specific control functions. Applications include engine and vertical turret lathe controls; gear hobbing, hydraulic press, surface grinder, contour milling, threading and transfer feed press controls; continuous or batch-operation furnace panels (Jul 1, p156).

COUNTER—*Veeder-Root Inc, Electronic Control Div, Hartford 2, Conn.* Automatic predetermining control device offers up to 100,000 possible control points. The electromagnetic counting unit permits the use of a wide variety of remote actuators. Unit has max counting speed of 600 counts per min, measures 9 x 10 x 5½ in.; power consumption of 10 watts max (Oct 7, p178).

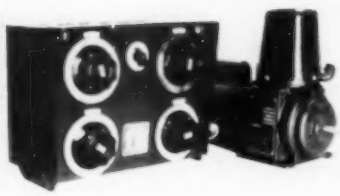
AUTOMATIC MACHINE CONTROL



ELECTRONIC CONTROL SYSTEM —*Electronic Control System, Inc, 2136 Westward Blvd, Los Angeles 25, Calif.* Electronic control system, called the Digimatic Model C-202 Point Positioner, enables one drillpress to do the work of five. System consists of three separate units—a punched tape preparation unit, a pushbutton-operated tape reader and control unit, and a compound servo table which positions the work under desired size drill. Table is operated by punched tape control unit (Dec 16, p167).

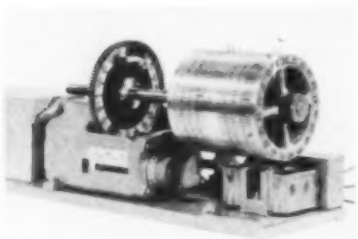


SERVOS — *Machine Controls Div, Minneapolis-Honeywell Regulator Co, Fourth Ave, S, Minneapolis, Minn.* Servo amplifier (XRJ301A) receives signal inputs from 60-cycle ac source and is designed for parallel summation, ratio comparison or series summation of input signals. It supplies driving power for 3-way servo valve (XVJ300A) which, in turn, controls flow of oil to hydraulic linear or rotary motion drives. Valve is available in ratings up to 10 gpm and 3000 psi (Feb 25, p192).



PROGRAM CONTROLLER —*Jordan Co, Inc, 3235 West Hampton Ave, Milwaukee 9, Wis.* New sequence control called the Sequentrol establishes a number of functions that must take place in a predetermined order to preset values. Among its applications are machine tool and welding positioner programming, work station control for assembling machines, and dipping machine programming (Sep 23, p190).

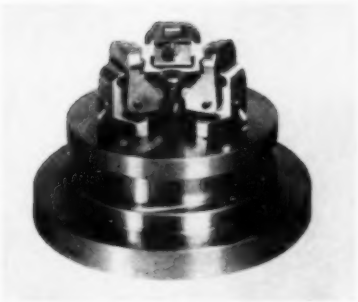
COUNTER UNITS—*Scully-Jones & Co, 1901 S Rockwell St, Chicago 8, Ill.* Toolitrol units provide visible signal when tool change is required. The units are pre-set to the number of parts to be produced before the tool is to be changed. Six models are available, having from one to six switches; 15-count switch range can be provided. Available ranges begin with 0 to 72 and go as high as 0 to 54,000 (Dec 2, p149).



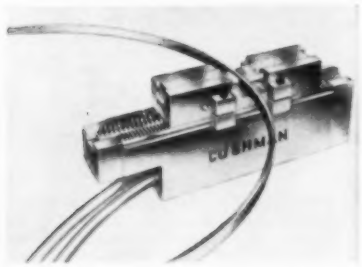
PROGRAM TIMER — *Counter and Control Corp, 5225 W Electric Ave, Milwaukee 19, Wis.* The Programonitor can be furnished for any time cycle up to max of 4000 sec. Time cycle is adjustable in ½-sec increments from 0 to one-half max range, and in 2-sec increments from one-half to full range. Intermediate switching events can be preset in 1-sec increments (Oct 7, p172).

AUTOMATIC GAGING—*Sheffield Corp, Autometrology Div, Dayton 1, Ohio.* Multi-Feedbak combines multiple automatic gaging and feedback machine control in single unit. Gage signals received from parts are transmitted to machine that produced part. These signals, flashing on small panel located at each machine, can then be used to stop or correct machine (Jan 14, p161).

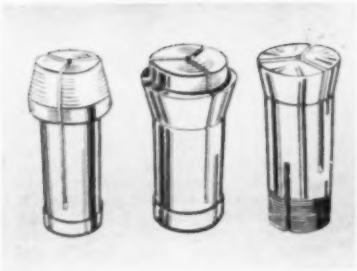
TOOLS AND ACCESSORIES



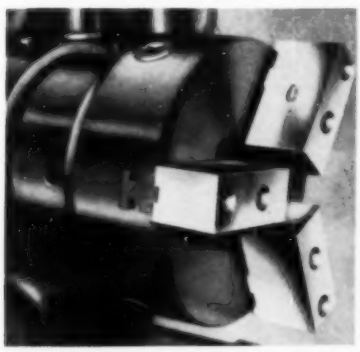
BEVEL-GEAR CHUCK—*Splinemaster Products Co, 6781 Maxwell, Van Dyke, Mich.* Chuck features locator pin that has free-rotating contact ball automatically adjusting to new contact point with each loading. Chuck body is constructed for locking pin-holding blocks in variety of positions. Chuck can be used for either OD or ID operations (May 20, p206).



CHUCK—*Cushman Chuck Co, 806 Windsor St, Hartford, Conn.* Automatic Pinch-Jaw chuck, for use on vertical or horizontal-spindle machines is designed for chucking parts of large diameter and small cross-section without strain or distortion while they are being machined. Maximum pinch of over 2000 lb at 85 psi is possible for each pinch jaw unit, with lift of less than 0.002 in. per jaw (Jul 29, p142).



NYLON COLLETS—*Non-Mar Nylon Collet Mfg Co, 302-4900 Euclid Bldg, Cleveland 3, Ohio.* Non-Mar collets are recommended for second operations on highly polished pieces and when machining nonferrous metals. Collets have a ⅛-in. center hole which is enlarged to suit job. They are available to fit lathes, milling machines, Zagar fixtures, B & S automatics, and Warner & Swasey turret lathe. Prices start at $7 (Nov 4, p188).



CHUCK JAW BLANKS—*Jergens Tool Specialty Co, 712 E 163rd St, Cleveland 10, Ohio.* New line is being mass-produced in standard sizes to fit approximately 90% of all master chucks. Precision machined to American Standard Form of SAE 1020 steel, these soft blanks can be formed to hold all types of irregularly shaped work (Sep 23, p194).

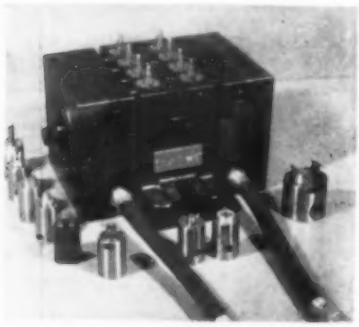
SCROLL CHUCK—*Imported by Alina Corp, 122 E Second St, Mineola, LI, NY.* Chuck permits clamping of workpiece on the largest possible diameter. Removable jaws are available in variety of styles for internal or external chucking or in blank form. Chucks are offered with or without shanks and in six sizes from 2 to 6 in. (Oct 7, p182).

COLLET CONTROLLER — *Adams Equipment, 18441 Hart St, Reseda, Calif.* This air-actuated device, called the Collet Control, opens and closes collets at the top of a button. Total weight is 14 lb. It will cycle continously in excess of 4500 rpm. The 3½ x 10-in. unit is designed to actuate draw-in collets or fixtures on turret lathes, second-operation machines, grinders, cutoff machines, assembly machines, and boring machines (Nov 16, p198).

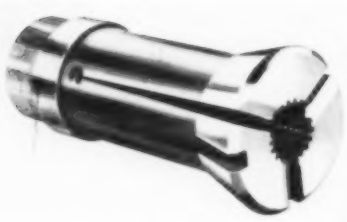
TRUING RING SET—*Rockford Engineered Products Co, 2324 23rd Ave, Rockford, Ill.* Used for boring soft chuck jaws to size, set consists of 48 rings. Complete set includes sizes from 1 to 4-in. OD in 1/16-in. increments. All rings are plated to prevent rusting (Dec 16, p180).

COLLET CHUCK—*Hall Mfg Co, 622 Tularosa Drive, Los Angeles 26, Calif.* Model C is 3-in. chuck made for American standard 8-in. flange-type spindles on jobs requiring 20 hp or more. One stroke of operating sleeve takes care of 0.050-in. automatic adjustability plus an extra 0.025-in. opening at open position for stock removal. Chuck can be operated by hand lever, air or hydraulic cylinder (May 20, p222).

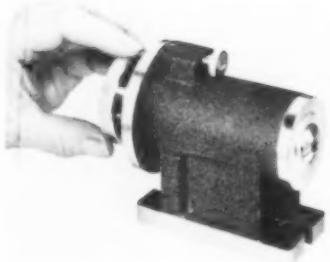
CAST-IRON COLLETS—*Modern Machine Tool Co, 2005 Losey St, Jackson, Mich.* Cast-iron collets reportedly reduce or prevent scratches and marks on stock being processed in company's cut-off machines. Collets are divided into 5 moving segments, to provide positive gripping of stock that may be slightly out-of-round. Last as long as those made of hardened steel (Aug 12, p172).



HYDRAULIC FIXTURE—*Multi Engineering Co, 1829 North 32nd Ave, Melrose Park, Ill.* Multi-Vise is an air-operated hydraulic fixture for holding parts of various dia and lengths during milling. Booster unit transforms shop air line pressure of 75 psi into a 500 psi hydraulic pressure. Standard model has eight collets, each with capacity of ¾-in. dia. Collets can be made in any shop from 1-in. round stock. Price is $600 (Oct 7, p164).



SELF-CLEANING COLLET—*Sheffer Collet Co, Traverse City, Mich.* S-C collet has angular ground surfaces at the end of the collet slits to repel sludge and chips and prevent foreign matter from entering collet and machine. Live collet action is retained over many months continuous service (Jun 2, p162).

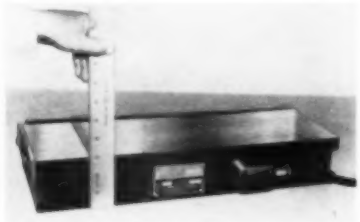


INDEXING HEAD—*Woodlawn Engineering Co, Inc, 2200 N Mannheim Rd, Melrose Park, Ill.* Indexing head uses 3C collets; can be supplied with 48 or 40-hole index plate. Unit has 2.500-in. center distance, is mounted on 2 x 4-in. base, and weighs 6 lb. Package consisting of index head, mahogany case, set of seven collets (⅛ through ½ in.) costs $110. Head alone is $69.50 (May 6, p174).

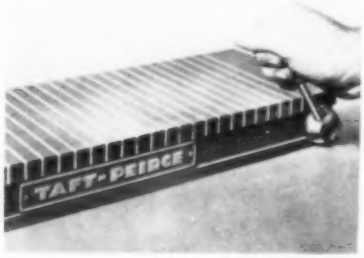
MANDRELS—*Erickson Tool Co, E 23rd & Hamilton Ave, Cleveland 14, Ohio.* Erickson-Nicholson-type expanding jaw mandrels are concentric within 0.0015 in. TIR. Type A mandrels of step-jaw design come in 5 sizes from ½ to 4 in., and accommodate hex as well as round holes. Type B mandrels of straight-jaw design come in 14 sizes to take bores from ½ to 7 in., and can be used in either square or round holes (May 6, p182).

MAGNETIC CHUCK—*Distributed by Air Transport Equipment, Inc, Amityville, NY.* Fimax universal magnetic chuck, made in England, is capable of providing an accuracy of 0.0005 in. over 12 in. Circular scales of swivel base are accurate within 30'. Chuck weighs 35 lb, has a working surface of 3 3/16 x 7 in., and is supplied in hardwood cabinet (Oct 7, p174).

MAGNETIC CHUCK CONTROLS—*Sundstrand Machine Tool Co, Sundstrand Magnetic-Pneumatic Products Div, Rockford, Ill.* Power-Grip remote control units for company's low-voltage (24-v dc) magnetic chucks consist of control cabinet and remote control station, and operate from 110-v ac pilot circuit. Type A units, with ratings to 125 watts, are smallest in line. Types B and C are available in ratings up to 4000 watts (Aug 26, p180).

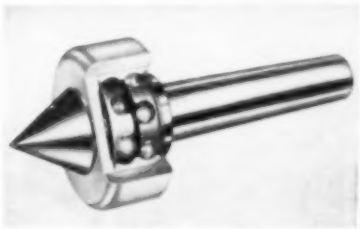


MAGNETIC CHUCK — *Hanchett Magna-Lock Corp, 456 Maple St, Big Rapids, Mich.* Model CL electromagnetic chuck stands only 2⅞ in. high and is available in seven sizes, 5 x 10, 6 x 12, 6 x 18, 8 x 18, 8 x 24, 10 x 15 and 10 x 16 in. It features all-steel welded construction and a fine pole laminated top which offers a uniform holding power, right out to the edges of the face plate (Nov 4, p183).

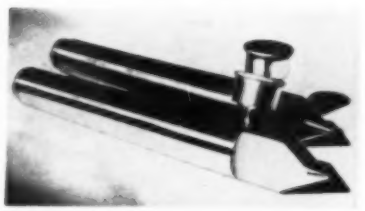


MAGNETIC CHUCK — *Taft-Peirce Manufacturing Co, Woonsocket, RI.* Model 824 has Alnico V chuck design that eliminates all dead spots and provides full edge-to-edge working surface. Faceplate uses epoxy resin non-magnetic separator material which makes chuck 27% lighter. Specifications are height of 2 7/16 in.; work surface 8 x 24 in.; magnetic surface, 168 sq in.; weight, 110 lb (May 6, p184).

MAGNETIC CHUCK—*O S Walker Co, Inc, Worcester 6, Mass.* Permanent magnetic chuck stands 2¾ in. high in largest of four available models. Weighing less than half as much as previous permanent chucks, device is available in four sizes: 6 x 10½ in., 6 x 12½ in., 6 x 18½ in. and 8 x 24 in. Ceramic magnetic material gives unit all the characteristics of electro-magnetic chuck (May 20, p196).

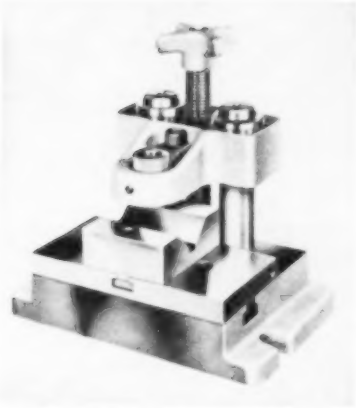


LIVE CENTER—*Ideal Industries, Inc, 1057 Park Ave, Syracuse, Ill.* Spin-Nose live center offers good load capacity and accuracy. Entire nose (point and bearing housing) turns with work. Unit is available in Morse tapers No. 1, 2, and 3. Centers are non-repairable, because low cost makes replacement more practical than overhaul (Jul 15, p190).



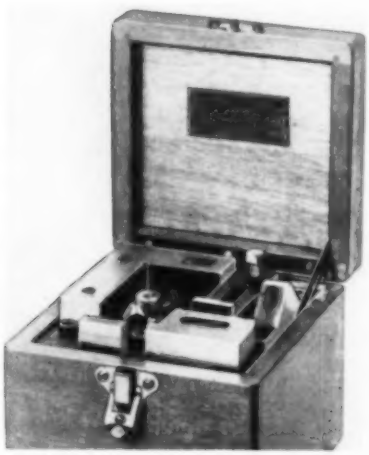
TAILSTOCK CENTER—*Tool Service Co, P O Box 10265 D, Tampa 9, Fla.* Positive internal lubrication of Oil Jet centers prevents eccentricity caused by scored holes. Minute hole (jet) in point acts as reservoir while small groove, at side of point, maintains constant oil film. Centers are available in all sizes of Morse, B & S and Jarno tapers. Shank is concentric with point within 0.0001 in. (Feb 11, p172).

WORKHOLDER—*Illinois Metal Products, 429 W Superior St, Chicago 10, Ill.* Imp Mule is combination parallel and V-block used to hold work on drillpresses, benches, and surface plates. Two sizes are available: No. 2, 3¼ in. wide, 9 in. long, 2¼ in. high, priced at $8.95; and No. 3, 4½ in. wide, 12½ in. long, 3 in. high, priced at $12.60 (Apr 22, p206).

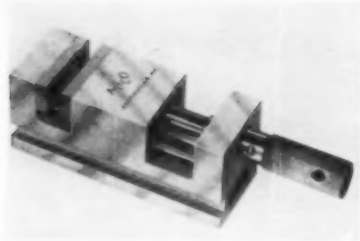


V-BLOCK DRILL JIG—*Rockford Engineered Products, Inc, 2524 23rd Ave, Rockford, Ill.* Adjustable V-block drill jig is designed to cut costs of center and off-center drilling, tapping and reaming. Standard equipment includes two interchangeable V-blocks, three interchangeable adapter bushings, and a centering locator plug. Device handles workpieces up to 2-in. OD. Bushings accept drills from 0.0135 to 0.5625-in. dia (Dec 16, p182).

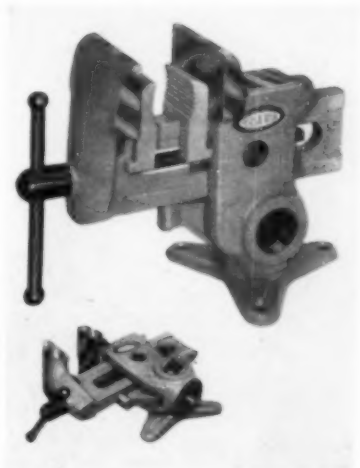
MAGNET ASSEMBLIES — *Storch Products Co, Inc, 9322 Greenfield, Detroit 28, Mich.* Ceramic Index magnets are attached to steel pole pieces and then molded into an epoxy resin to form magnetic assemblies which are used for transferring parts, retaining of parts in assembly operations, and other varied uses. Units are available in many shapes and sizes (May 6, p184).



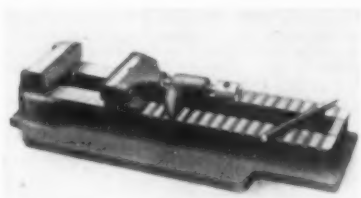
V-BLOCK ANGLE PLATE — *Lassy Tool Co, Plainville, Conn.* Device called Master features a side gage that automatically positions the work without the aid of surface plates or squares. Adjustable parallel attaches to side of angle plate to provide an adjustable-height workshelf. A stepped clamp with elongated slots holds even the smallest workpieces (Dec 30, p128).



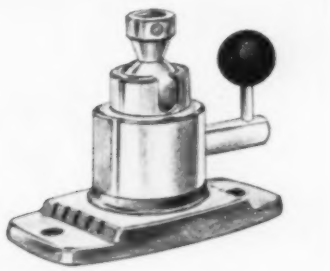
TOOLMAKER'S VISE—*Air Transport Equipment, Inc, Amityville, LI, NY.* Vise is available in three models: smallest has jaw width of 1¼ in., depth of 7/16 in., jaw opening of 1 in., and weighs 1¼ lb; largest size has jaw width of 2½ in., and in-between model 1⅞ in.—other dimensions being in proportion. Prices start at $24.50 (Aug 12, p176).



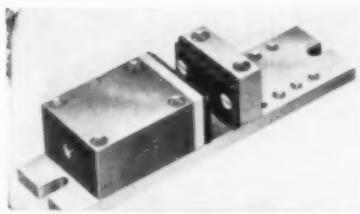
VISE—*Will-Burt Co, Dept AMN, Orrville, Ohio.* Versa-Vise offers both smooth jaws and replaceable serrated jaws. Unit turns full 360° and can be locked in any position by tightening jaw handle. Price is $13.95 (Sep 9, p209).



HOLD-DOWN VISE—*Distributed by Wharton Unitools, PO Box 202, Valley Stream, LI, NY.* Taylor vise is said to provide accurate seating and to grip work tighter than other hold-down vises. There are 24 models, with jaws ranging from 3 to 8 in. A 3-in. vise will take up to 7 in. between the jaws; an 8-in. vise will take up to 18-in. Prices start at $45 (Sep 9, p206).



UNIVERSAL WORK POSITIONER —*Wilton Tool Mfg Co, Inc, Schiller Park, Ill.* Veep PowRarm can be used with vises or special workholding devices to move work to any position in all three planes. At end of shank there is ½-in.-dia female socket equipped with socket head setscrew. Force is applied by eccentric on main shaft. Unit will support 15 lb at 6 in. (Jul 29, p142).



AIR-OPERATED VISE—*Burklyn Co, 3429 Glendale Blvd, Los Angeles 39, Calif.* Toolmor Air Vise is designed as a lightweight, compact holding device for assembly, bench and other light work. Dimensions are 7⅝ in. long, 2 in. wide, and 1⅝ in. high, yet the max opening is 2½ in., which is adjustable at ½-in. increments. The vise mounts can be removed from the base and used in any size or shape of work arrangement (Nov 18, p194).

ANGLE ADAPTER—*Columbian Vise & Mfg Co, Cleveland 4, Ohio.* Adapter permits movement of Gyro-Vise up and down in arc. With adapter, unit can be placed in any position required. Weight of adapter is 2¼ lb. Bulletin LL-3990 (Mar 25, p208).

DRILLPRESS VISE—*Reed Mfg Co, Erie, Penna.* Utility drillpress vise is readily adaptable for work on special pieces, jigs and fixtures. Model DP35 has jaws which open to 4¾ in. and measure 3½ in. wide and 1½ in. deep. Model DP50 has jaws which open to 5⅞ in. and measure 5 in. wide and 1⅝ in. deep (Dec 2, p166).

INTERCHANGEABLE JAW FACES—*Wilton Tool Mfg Co, Inc, Schiller Park, Ill.* Jaw faces are available in five different materials: steel, diamond serrated, hardened; steel, smooth, hardened; steel, smooth, soft; brass or copper, smooth; and plastic fiber, smooth (Feb 11, p172).

VISE—*Dery Tool & Die Co, Main St, Pine Meadow, Conn.* Equalizing gang vise consists of solid jaw and body which holds series of equalizing pads or blades. Solid jaw is locked to body with screws and work is inserted. V-grooves and equalizing pad form 3-point chuck for each work-piece. Company invites submission of specifications for tailor-made jaws (Feb 25, p208).

DRILLPRESS VISE—*Wilton Tool Mfg Co, Inc, Schiller Park, Ill.* Drillpress vise, which combines rapid action with unlimited takeup, incorporates company's Rapid Titan Nut which engages and disengages the screw automatically. Vise is 4½ in. wide, has solid base, and can be turned on end for accurate 90° drilling. It is 2¾ in. high, has 1¾ in. jaw depth (Dec 2, p164).

AUTOMATIC BENCH VISE—*Wilton Tool Mfg Co, Schiller Park, Ill.* Wiltomatic opens and closes up to 2000 times per hr by foot pedal air control. Max jaw locking force ranges from 2513 to 6891 lb, depending upon size of unit; power stroke is adjustable up to ½ in. (Jan 14, p180).

MACHINE FIXTURE—*Ovatt Engineering & Mfg Co, Sun Valley, Calif.* Combination instrument and machine fixture called Derry Triangulator consists of two 360° protractors set at 90° to each other with mounting plates on top and bottom. By use of quick release clutches any compound angle on a spherical arc can be quickly set, locked and adjusted to within one minute of arc accuracy (Jul 29, p144).

MACHINE VISES—*Redbow Precision Tool Co, 1113 West Lawn Ave, Racine, Wis.* Hylo machine vises, products of Great Britain, incorporate 2-speed closing and gripping traverse with open-jaw capacities up to 12 x 12¼ in. Available in five sizes with capacities ranging from 2 to 12¼ in., all models feature differential feed mechanism that permits increase in gripping torque without sacrificing speed of traverse (Oct 21, p226).

VISE—*Wilton Tool Mfg Co, Inc, Schiller Park, Ill.* Ends of base of drillpress vise are cut back, and sides are machined to form a true right angle with drillpress tables. Vise is 2¾ in. high, jaws are full 1¾ in. deep. Two models are available: one with conventional screw action, one with rapid action (Jun 3, p156).

SWIVEL-BASE VISES—*L-W Chuck Co, 25 S St Clair, Toledo 4, Ohio.* Line of vises features new flange construction; all surfaces ground; workholding surfaces always at true angles, or parallel to table. Jaws of Mogul are ⅝ in. thick, 8⅝ in. wide, 2 3/16 in. deep, open 6 in. Dimensions of Master are, respectively, ½, 6½, 2, open 4 in. Junior model is ⅜, 4½, 1¾, open 3¼ in. (Apr 22, p204).

MACHINE VISE—*Universal Vise & Tool Co, Parma, Mich.* Model P-3 heavy-duty type has been added to Low-Boy line. Device has 8½-in. jaw width, 6¾-in.-max jaw opening with jaw plates in place, and weighs 194 lb. It is equipped with coolant run-off trough, and has solid bottom slide (May 20, p214).

DRILLPRESS VISE — *Columbian Vise & Mfg Co, Cleveland 4, Ohio.* A series of four new drillpress and milling machine vises is said to eliminate the need for special and expensive jigs and fixtures. There is complete interchangeability of parts from one vise to another of the same size. Vises range in size from 3½ x 1⅞ x 4½ in. (jaw width x depth x opening) to 5 x 2 x 6 in. (Nov 18, p189).

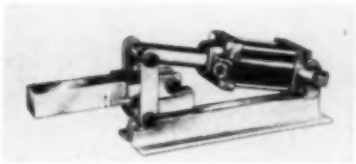
DRILLPRESS VISE—*L-W Chuck Co, 26 South Saint Clair St, Toledo 4, Ohio.* Drillpress vise, designated the Adjusto-Quick Control, exerts a jaw pressure of from 1 to 1500 lb. Pressure is adjusted by turning the front adjusting screw bushing. The heavy, 4-in.-wide, removable jaw inserts allow simple, quick changeover to low cost jigs and fixtures. Max opening is 5½ in. (Dec 16, p178).

FILING VISE—*Foley Mfg Co, Industrial Dept, 3600 N E Fifth St, Minneapolis 18, Minn.* Model 346 filing vise permits quick and accurate filing of circular saw blades of 4 to 15-in. dia. Tension is adjustable. Blades may be filed either vertically for straight-across filing, or locked at any desired angle up to 45°. Unit is designed for bench mounting (Nov 18, p204).

SAWING VISE—*Imperial Brass Mfg Co, 1200 W Harrison St, Chicago 7, Ill.* 384F Multi-Use provides quick, easy way of sawing wire-braid hose and metal tubing up to 1½-in. OD. Special gripper holds material and is said to provide clean, square cut. Vise has ratchet-type slide-to-size adjustment (Jul 1, p152).

STEP BLOCK—*Distributed by Karl A Neise, 404 Fourth Ave, New York 16, NY.* Mermod Master step blocks (Switzerland) speed setup operations and offer increased rigidity and safety. Adjustments can be made in steps of approx 0.04 in. Full set consists of 16 pieces, 4 each with 5, 9, 12 and 23 teeth. All sets are available in widths of 1.77, 2.76, and 3.54 in., and come in tray (Sep 9, p204).

ALUMINUM SETUP BLOCKS—*Jergens Tool Specialty Co, 712 E 163 St, Cleveland 10, Ohio.* Blocks are soft enough to prevent damage to machine table yet strong enough to withstand heavy weights under clamping pressure. Blocks, mounted on 3-in. risers, hold work from 0 to 3 in. high, and come in sets of 2 multi-step blocks and 2 risers per package (Sep 9, p212).



CLAMPS—*Lapeer Manufacturing Co, 3042 Davison Rd, Lapeer, Mich.* Hand clamp is available in four models with either solid bar (Models VS-200HD and VS-400HD) or channel bar (Models V-200HD and V-400HD) of cold rolled steel with clamping pressures of 200 or 400 lb. Air (or oil) operated clamps, Models AOS-200HD and AOS-400HD have solid bars for demanding applications (Mar 25, p191).

C-CLAMPS—*Cincinnati Tool Co, Cincinnati 12, Ohio.* No. 44 Superclamp Twins are furnished with sliding pin handle, unless steel wing handle is specified (Mar 11, p192).

POWER SETUP CLAMPS—*Wilton Tool Mfg Co, Inc, 9525 Irving Park Rd, Schiller Park, Ill.* Clamps designated PowRlock, can be installed on any standard machine, jig, or fixture to replace nuts and bolts. Basic unit consists of air control, hydraulic booster, and one of three models of clamping heads. Boosters come in three sizes, capable of operating one, two or four heads (Aug 12, p182).

SWING CLAMP—*Jergens Tool Specialty Co, 712 E 163 St, Cleveland 10, Ohio.* Clamp designed for use in restricted spaces utilizes a spring-loaded shaft which enables clamp to swing quickly and easily out of way of fixture or work. Work holding bulletin available (Dec 2, p168).

CLAMPS—*Lapeer Manufacturing Co, 1150 W Baltimore, Detroit 2, Mich.* 800-lb hand clamps added to Knu-Vise line are equipped with heavy pressure spindles and horizontal rather than inclined toggle bars. Models V-800 and VC-800 available in Vertical Handle series; Models SB-800 and SBC-800 in Swivel Base series (Dec 2, p164).

CLAMP—*Jergens Tool Specialty Co, 712 E 163 St, Cleveland, Ohio.* Revolving clamp assembly incorporates detachable, spring-lock revolving shoe on knob screw for positive workholding on uneven clamp-down. Unit is made in three sizes: 1½, 3, and 4-in. Clamp is easily attached by drilling and tapping one hole (Jul 15, p192).

STRAP-CLAMP — *Jergens Tool Specialty Co, 712 East 163 St, Cleveland 10, Ohio.* Clamping assemblies, available in variety of sizes, feature a universal-type strap milled from solid stock and five, soft-stock, interchangeable pads. Pads are attached to strap by two screws; brass and bronze pads can be used for very soft work (Oct 21, p216).

C-CLAMPS—*Industrial Clamp Co, Inc, 6445 Gratiot Ave, Detroit, Mich.* Extra-heavy-duty C-clamps are deep throated and are heat-treated. Adjustable handle and floating swivel are copper plated to resist adhesion of welding spatter. Clamps are available in seven sizes and weights, ranging from 2 to 12 in. (Oct 7, p194).

C-CLAMP SWIVELS — *Wilton Tool Mfg Co, Inc, Schiller Park, Ill.* Perma-Pad C-clamp swivels are guaranteed loss-proof. Inside the collar is a groove machined to accept a hardened steel spring. Clamps are assembled by forcing the ball past the spring. Spring then expands behind ball, forming a joint that will withstand as much force as spindle itself (Nov 18, p212).

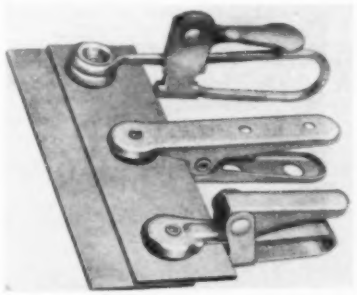
FIXTURE KEY—*Ace Drill Bushing Co, Inc, 5407 Fountain Ave, Los Angeles, Calif.* Eccentric fixture key offers zero concentricity for lathe fixtures mounted on slotted faceplates. Unit provides fast, simple, accurate alignment of holes and slots, quickly correcting any misalignment of faceplates and milling fixtures up to 1/16 in. Interchangeable keys adapt fixture to any machine having standard-width key slots (Jun 17, p204).

STRAP CLAMP—*Hi-Lo Products Co, Div of Steel City Testing Machines, Inc, 8817 Lyndon Ave, Detroit 38, Mich.* Assemblies tradenamed Hi-Lo are available with clamping capacities of ⅞ to 2¼ and 2⅜ to 4⅞ in. They are available with interchangeable T-bolt or stud bolt assemblies, and feature a ¼-turn serration lock that provides quick, accurate adjustment (Dec 16, p176).

C-CLAMP—*Grand Specialties Co, 3101 W Grand Ave, Chicago 22, Ill.* C-clamp features ratchet screw that instantly positions clamp screw and releases it with trigger action. Alloy steel construction gives added strength and permits throat depth up to 6 in. Screw, handle, and swivel are copper plated for protection against welding spatter and rust-proofed with enamel finish (Jul 15, p201).

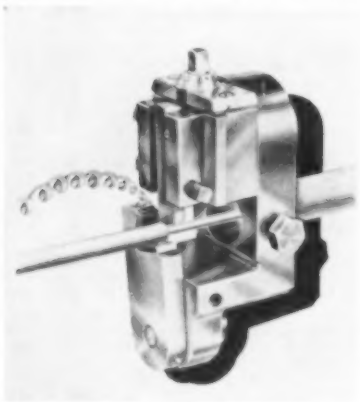
CLAMP—*Cincinnati Tool Co, Cincinnati 12, Ohio.* Deep clamp, No. 48, is designed for operations requiring deep-reaching clamps, has forged steel heat-treated frame and large-dia full length screw with forged wing. Device is available in four stock sizes: 6 x 8, 8 x 12, 8 x 16, and 12 x 16 in. (Jun 3, p172).

CLAMP—*Lapeer Manufacturing Co, 1150 W Baltimore, Detroit 2, Mich.* 800-lb air clamp added to Knu-Vise line is available in two standard models: the AO-800 toggle clamp for conventional clamping, and the AODT-800 double-toggle type for difficult mounting situations (Nov 4, p192).



CLAMPS—*Wedgelock Corp, Dept 1-R, 5446 Satsuma Ave, North Hollywood, Calif.* Yates clamps for dipping, flange work, edge work, and bench or wall use come in four types: flat spring-steel clamp, 5/32-in. capacity; spring grip clamp, 5/16 in.; spring wire clamp with cam lever lock, 1¾ in.; and conveyor clamp with saw-tooth jaws and a capacity of ¼ in. (Mar 25, p220).

JAW CLAMPS—*J & S Tool Co, Inc, 87 Dorsa Ave, Livingston, NJ.* Clamps secure workpieces to machine tools. When screw is turned, jaw travels in and down, forcing workpiece against opposite clamp, and downward against face plate or table. Capacities range from 2½-ton to 12-ton pressure (May 20, p223).



TOOLHOLDER—*R B Tool Co, Inc, 785 N Broadway, White Plains, NY.* Box tool features micro-fine adjustment for cutter, and carbide-tipped back rests with built-in coolant tubes. Toolholder can be used for both l-h and r-h turning (Mar 11, p177).

STEP DRILL ADAPTER—*B & W Precision Products Co, PO Box 3865, Detroit 5, Mich.* Form-relief flat step drills can be used with this adapter on B & S automatics where clearances are too close to permit conventional holders. Adapter fits inside tool opening of any floating or other type holder. Drill blades are positively locked yet quickly and easily changed (Sep 23, p204).

QUICK-CHANGE CHUCK—*Imported and distributed by Karl A Neise, 404 Fourth Ave, New York 16, NY.* Hassner quick-change chuck can be used in horizontal or vertical position, and has runout of only 0.00039 in. Small-size tools can be changed at rpm's up to 7000, larger ones at speeds to 3000 rpm. Chuck can be operated in both cw and ccw directions, thus permitting thread-cutting operations (Jul 1, p142).

TOOLHOLDER — *Carmet Div, Allegheny Ludlum Steel Corp, Oliver Bldg, Pittsburgh 22, Penna.* Toolholder for carbide inserts features clamp that has a positive gripping action and gives greater chip clearance; it can be used with or without the chip breaker. Clamp screw is accessible from both top and bottom of the holder (Oct 21, p214).

PRECISION COMPOUND — *Tracer Control Co, 593 E Ten Mile Rd, Hazel Park, Mich.* Compound offering precision holding and locating provisions for spindles and workpieces is designed for wide range of adjustments. Horizontal and vertical dials, screws, and nuts are machine-calibrated in thousandths. Unit can be mounted and used on any surface in any position (Dec 30, p122).

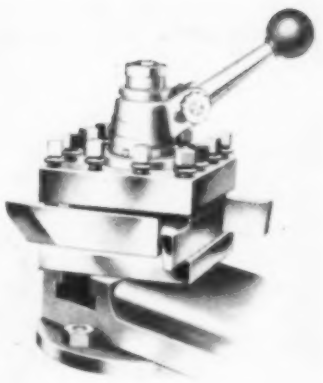
QUICK-CHANGE HOLDER—*Universal Engineering Co, Frankenmuth, Mich.* Kwik-Switch is designed for heavy cutting in die sinking and similar operations. The 3-piece device provides positive square drive, back-up screw stop and depth adjustment. A collet-type adapter, designed for presetting, is furnished with the holder (Dec 16, p174).

ROLLER TURNER TOOL — *Wendt-Sonis, Hannibal, Mo.* Reported to be first mechanical toolholder to cut a 90° shoulder, roller turner toolholder cuts machine downtime to minimum, because cutting edges can be changed in seconds by unclamping and indexing carbide inset. Insets can be indexed to +0.001 in., so adjustments for depth and length of cut are unnecessary. Tool can be used with 0° lead (Sep 9, p216).

KEYLESS DRILL CHUCK—*R B Tool Co, 785 N Broadway, White Plains, NY.* Validus, a German product, is reported to offer unparalleled accuracy of concentricity. Sealed ball bearings allow for easy opening and closing by hand. Unit is available in four sizes. Bulletin available (Nov 4, p196).

COUNTERSINK TOOL—*Cogsdill Tool Products, Inc, 12980 West 8 Mile Rd, Oak Park 37, Mich.* Reverse surface countersink tool, designated BakSink, can also be used for some back-forming and grooving operations. Requires no specialized equipment, spindle, or workhead and cuts on forward feed only. Interchangeable cutters and pilots allow for a wide range of forms and hole sizes (Jul 1, p135).

BORING-TOOL HOLDER — *N C Thomsen Co, Tool Div, 1945 Pinecrest Dr, Ferndale 20, Mich.* Indexing toolholder accepts straight-shank boring tools in a variety of diameters. Smallest model, No. 1, accepts four different diameter tools—3/16, ¼, ⅜, and 7/16 in.; No. 2 holds six tools, from 3/16 to ½-in. dia; No. 3 holds six tools, from ⅜ to 1-in. dia (Sep 23, p192).



TURRET TOOL POST — *McCrosky Tool Corp, Meadville, Penna.* Clamping handle is feature of new line of turrets. Raising handle to 45° angle clamps locking collar around center column of turret with powerful cam action that locks turret rigidly. Lowering handle unlocks unit and permits turret to be rotated freely to any of 12 indexing positions. Turret is available in 3 styles and 11 sizes (Apr 22, p186).

TOOLHOLDER—*Diamonite Products Mfg Co, Canton 2, Ohio.* Superigid toolholders are available in 1 x 1-in., 1 x 1¼, and 1 x 1½-in. shank sizes, RH and LH, for special ¾-in. square and ⅝-in. included-circle triangular Diamonite oxide indexable-insert turning, shoulder, and facing tools, with negative, neutral, and positive rake (Mar 11, p177).

QUICK-CHANGE TOOLS — *Scully-Jones & Co, 1916 S Rockwell St, Chicago 6, Ill.* Line of quick-change tools, designed for holding end-cutting tools on automatic screw machines, offers several outstanding advantages: sharply reduce downtime; preset tooling that guarantees accurate reproduction of parts and eliminates in-the-machine adjustments; operation at optimum cutting speeds (Jul 29, p143).

ROTATING DIAMOND TOOLHOLDER—*J K Smit & Sons, Inc, Murray Hill, NJ.* Turnit is reported to reduce diamond tool costs 50%. Available for either manual or automatic operation, Turnit's rotating head presents continuous new diamond edge against grinding wheel (Mar 11, p204).

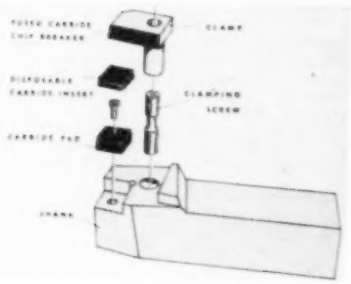
DRILL CHUCK—*Beaver Tool Co, Box 256, Huntington, LI, NY.* Mini-Chuck has cut-back slot which permits full tension grip of drill to prevent slippage and pull-outs. Available in range of chuck sizes from No. 50 to "F" with adapters to fit spindles of standard angle-head and snake drills (Feb 11, p184).

BALL-BEARING CHUCKS—*Supreme Products Corp, 2222 S Calumet Ave, Chicago 16, Ill.* Geared chucks grip with greater force than any plain-bearing chuck. Ball races are formed directly in hardened chuck body and in the one-piece gear nut. Sleeve which covers unit is free from protrusions (Jul 29, p143).

TOOLHOLDERS—*Allegheny Ludlum Steel Corp, Carmet Div, Oliver Bldg, Pittsburgh, Penna.* Holders, available in more than 90 styles and sizes, permit easy indexing of carbide tips and feature gripping design that exerts cutting pressure in same direction as clamp screw. Holders are cadmium plated and have replaceable carbide chip breakers (Feb 25, p208).

PROFILING TOOL—*Kennametal Inc, Latrobe, Penna.* Tool designed for both roughing and finishing cuts has rigid support and clamp to hold insert in proper cutting position when direction of cutting forces changes, as in plunge or face-out cuts. RH and LH inserts are available (Jul 15, p194).

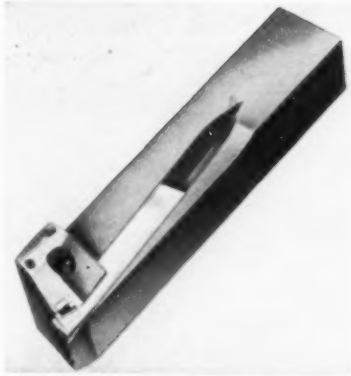
THREADING HOLDER—*Aloris Tool Co, 151-37 Sanford Ave, Flushing 55, NY.* Holder comes with interchangeable, high-speed threading blade which has two cutting edges. Operator can reverse lathe and cut thread without fear of hitting shoulders. Literature available (Aug 12, p178).



TOOLHOLDER—*General Electric Co, Metallurgical Products Dept, Detroit 32, Mich.* Line of Carboloy toolholders, called Lift-O-Matic, features a one-piece chipbreaker-clamp that functions automatically. Other features include a clamp screw accessible from top or bottom and a clamp color coding for quick identification. Chipbreaker-clamp has a carbide coat fused right to the chipbreaker surface to eliminate braze failure (Dec 2, p152).

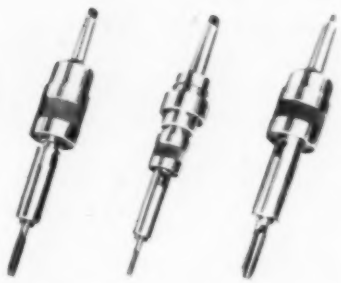
DRILL AND REAMER HOLDER — *RoyEL Tools, 4221 Excelsior Blvd, Minneapolis 16, Minn.* 1½-in.-capacity drill and reamer holder is available in three shank sizes: 1¼, 1½, and 1¾ in. Designed for use on multiple-spindle automatics and turret lathes, holders utilize pair of independently mounted sliding jaws which provide 4-point holding (Jul 1, p144).

FACING-TOOL HOLDER — *Everede Tool Co, 2000 N Parkside Ave, Chicago 39, Ill.* Facing-tool holder affords positive rake, positive center, and positive chip control. Holder is made of heat-treated alloy steel and uses a solid carbide chipbreaker and a solid carbide triangular tool bit. New design permits up to 2-in. reduction on diameter in one pass (Sep 9, p184).



TOOLHOLDER — *Everede Tool Co, 2000 N Parkside Ave, Chicago 39, Ill.* Holder incorporates solid carbide triangular toolbit for positive rake turning, permitting greater depths of cut with decreased tool pressures, and up to 30% hp reduction over negative rake tools. Additional features: up to 2-in. reduction on dia in one pass; any nose radius to suit machining requirements and optimum finish (Jul 29, p150).

MILLING ARBOR—*Scully-Jones & Co, 1901 S Rockwell St, Chicago 8, Ill.* Increased bearing surface eliminates cocking when spacers and sleeves are snubbed up on arbor. Larger fillet reinforces stress point between arbor and shank. Style A, for light work and small cutters, is made in sizes from ⅞ to 1¾ in. Style B, for larger cutters and dual overarm support is made in sizes from ⅞ to 2½ in. (Apr 8, p182).



TAP DRIVERS—*Scully-Jones & Co, 1901 S Rockwell St, Chicago 8, Ill.* Safe-Torque tap drivers feature overrunning roller drive design that releases completely when preset torque is reached. Tension and compression type allows tap to jump away from last thread; quick-change type allows tool change while machine is running; heavy-duty type is designed for torques up to 2400 in.-lb (Feb 25, p198).

DRILL CHUCK—*Distributed by Karl A Neise, 404 Fourth Ave, New York 16, NY.* Drill chuck called Rapid tightens automatically, without key. There is no slipping or chewing up of drill shank; ball-bearing construction makes opening extremely easy. Device is available in several sizes: smallest has capacity of 0 to ¼ in; largest, ⅛ to ⅝ in. Prices range from $12.80 to $18 (Aug 12, p174).

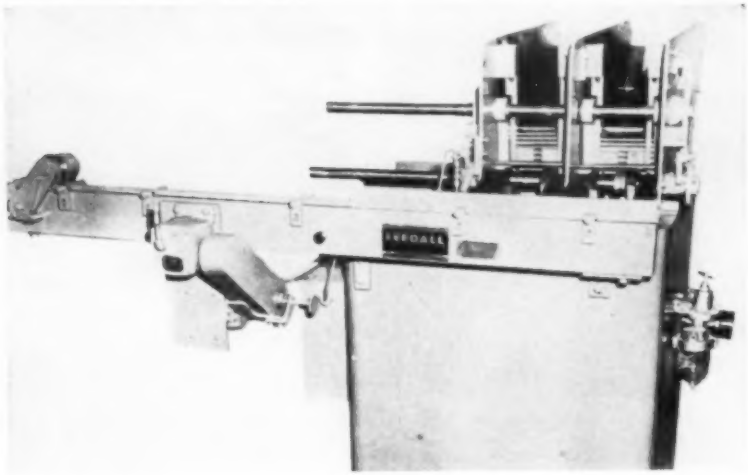
TOOLHOLDERS — *Wesson Co, 1220 Woodward Heights Blvd, Ferndale 20, Mich.* Two styles designed for 30° and 45° chamfering operations have been added to line of Multicut holders for throw-away carbide inserts. The 30° lead angle style, designated TDRC-TDLC is also suitable for 90° shoulder turning by angling holder in toolblock. The 45° style is designated SERC-SELC (Jan 14, p168).

LOCK WEDGE—*Futurmill, Inc, 6360 Highland Rd, Pontiac, Mich.* Vise-Lok is a positive locking wedge that can be tightened or released by an Allen wrench. Device can be used in toolholders, milling cutters, lathe tools and other assemblies requiring a wedging principle. Standard sizes are ¾ to ⅝-in. OD and ⅜ to 1½ in. in length (May 6, p188).

TOOLHOLDERS—*Besly-Welles Corp, South Beloit, Ill.* Features of holders include positive insert location, interchangeable parts, wide selection of negative and positive rake holder styles, sizes and shanks. Wide variety of triangular and square carbide throwaway inserts available for use with holders (Jan 14, p174).

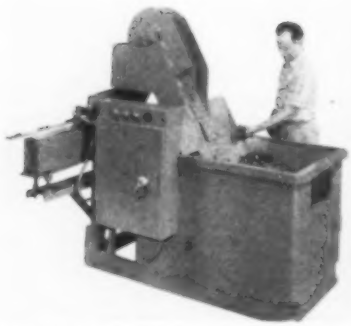
TOOLHOLDER — *Rockford Engineered Products, Inc, 2324 23rd Ave, Rockford, Ill.* Adjustable toolholder for turret lathes is designed to insure true-center drilling, reaming and tapping. It will compensate for as much as 1/32-in. misalignment. Dead-center settings are made by adjusting positioning setscrews and tightening locking capscrews. Four standard holders are provided, in bore and shank diameters of ¾, 1, 1½, and 1¾ in. (Nov 18, p215).

END MILL DRIVER—*Portage Double-Quick, Inc, 1026 Sweitzer Ave, Akron 11, Ohio.* Driver has provision for offset positioning which produces orbital motion of cutting tool. Driver accommodates shanks from ⅝ to 1 in.; eccentric micrometer positioning ranges from 0 to 0.062 in. off-center (Jul 15, p200).

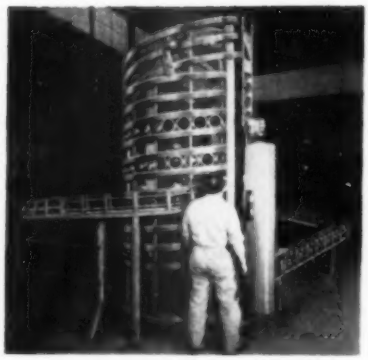


BAR FEEDER—*Feedall, Inc, 38399 Pelton Rd, Willoughby, Ohio.* Model 7000-B, using dual automatic feed, handles two production parts simultaneously at 50 pieces per min. Two feed chutes selectively arrange parts on external feed track, orienting them to flow into production machine at any desired speed (Jul 29, p146).

FEEDER—*Feedall, Inc, Willoughby, Ohio.* Universal-joint spiders are fed automatically to centerless grinder by special feed (a modification of company's Model 2500). Parts are placed in hopper, from which they are taken by elevating conveyor to delivery chute for orientation and delivery to grinder (Feb 11, p174).



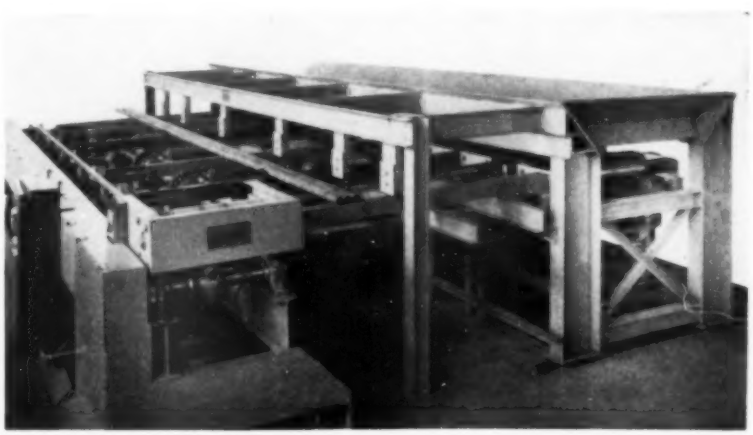
STORAGE FEEDERS—*Campbell Machines Co, 18634 Fitzpatrick, Detroit 28, Mich.* Units will store, elevate, orient and feed parts having over-all dimensions of from ⅛ x ⅛ x ¼ in. to parts as large as 3 x 6 x 10 in. Storage capacities of 5, 10 and 20 cu ft are available. Parts may be fed at rates up to 300 pieces per hr (Dec 16, p174).



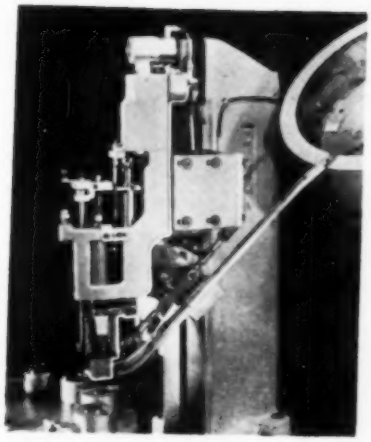
STORAGE UNIT—*Michigan Tool Co, Gear-O-Mation Div, 7173 E McNichols Rd, Detroit 12, Mich.* Rotary storage unit for parts or blanks that can roll is assembled from standard components. Operation is pneumatic. Parts are guided through "accept-reject" device to caged double threads (or tracks) and gravity fed to elevator, which works off stroke-lift piston. As parts leave elevator they are rolled through circular tracks to exit takeoff. (Mar 25, p190).

HYDRAULIC BAR FEED — *Boyar-Schultz Corp, 2000 South 25th St, Broadview, Ill.* Model S Hydra-Lite feeder is designed to feed stock accurately, even at high spindle speeds designed into late-model single-spindle screw machines. New Swing Stop accessory controls length of piecepart as accurately as turret stop. Units are available in capacities ranging from 3/32 to 1⅝ in. (Jul 1, p148).

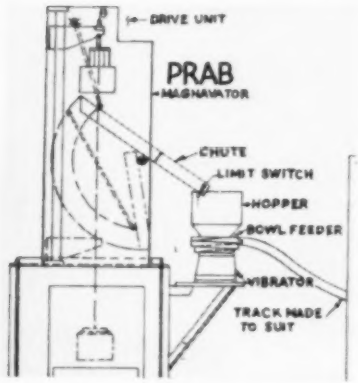
AUTOMATIC BULK LOADER — *Feedall, Inc, 38399 Pelton Rd, Willoughby, Ohio.* Cycled for automatic loading of a vibratory feeder, Model 2400 loader is self contained and is powered by ½-hp motor and variable-speed drive with electrical controls. Hopper has capacity of 4 cu ft. Parts are picked up from hopper by metal cleats on moving conveyor and elevated to the vibratory feeder (Oct 21, p224).



BAR AND TUBE FEEDER—*Spurgeon Co, 23501 Hoover Rd, Van Dyke, Mich.* Feeder consists of three sections: the hopper, designed to receive bundles of bars or tubes; transfer table that transfers and meters pieces from hopper to conveyor; and powered V-roll conveyor that feeds pieces to forming operation or furnace (May 11, p190).



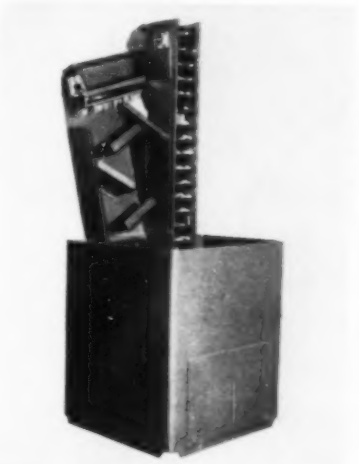
PARTS POSITIONER—*Dixon Automatic Tool, Inc. 2300 23rd Ave, Rockford, Ill.* Model PR-3, capable of guiding variety of piece parts automatically from feeder track to fixture, handles parts from 1/16 to 3 in. OD at rates up to 7200 per hr. Dimensions are 21 in. high x 3 in. wide x 5 in. deep. Positioners are available with strokes of 1, 2, 3, or 4 in. with speeds up to ½ sec per cycle (May 6, p176).



FEEDER SYSTEM—*Prab Conveyors, Inc, 30121 Groesbeck Highway, Roseville, Mich.* Automated small parts feeding system handles pins, nuts, rivets, stampings, and other small parts. Magnavator small-parts elevator is used to feed a bowl feeder. Bowl feeder, agitated by vibrator, draws from hopper and automatically feeds, aligns, and meters parts to press or machine (Jul 1, p144).

FEEDER — *Automatic Methods Inc, 802 W Grand St, Elizabeth, NJ.* Clip feeder and staker unit orients and then stakes clips to automobile window trim. Unit, consisting of vibratory feeder and an electro-punch device adapted for staking, replaces a hand-fed punchpress (Mar 25, p202).

HOPPER-FEEDER—*KDI Corp, 959 Exchange St, Rochester 8, NY.* Model 110 Special drum hopper features a 10-in.-dia. steel drum having a capacity of 100 cu in. Feeder can be quickly and easily tooled to feed headed fasteners, nuts, rivets, wire terminals, light electrical components, and other small metal and plastic parts at rates up to 150 pieces per min (Sep 23, p198).

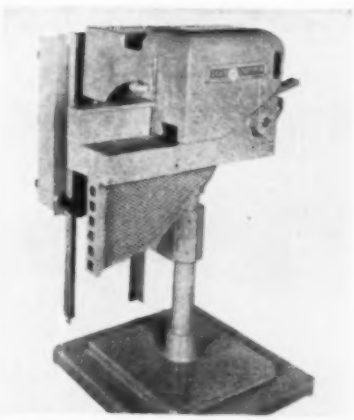


FEEDERS—*Feedall, Inc, Willoughby, Ohio.* Two Model 2200 feeders, mounted together, combine delivery chutes to feed two different-sized parts to automatic drilling machine. Each feeds stream of oriented parts into chute where they are subdivided by shuttle device into two chutes, providing four streams (Mar 25, p220).

TAPER-LOCK PUSHER—*Allen Collet Mfg Co, Melvindale, Mich.* Burns Pusher is designed so that wear on gripping surface is compensated by automatic adjustment of tapered locking surface. After feeding bar into position, it locks so that bar cannot slip back into pusher or bounce back from stock drop (Jan 14, p180).

WORK FEEDER—*Mead Specialties Co, Dept WF-4, 4114 N Knox Ave, Chicago 41, Ill.* Model 43 features new air cylinder designed to accept a larger-diameter return spring. Other redesigned features include increased oilite bearing surface, more uniform dimensions for slide and dovetailed ways, and machine-ground mounting surfaces (Jun 17, p217).

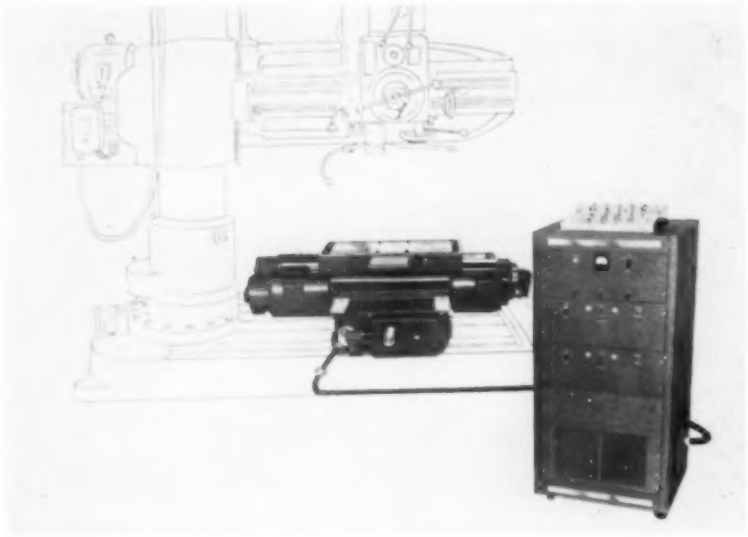
PARTS FEEDER—*Production Feeder Corp, 3150 Johnnycake Ridge Rd, Mentor, Ohio.* Elevating hopper, Model 2000, feeds sliding, rolling, or headed parts into production machines at predetermined rates. Unit has 36-in. loading height, and will handle rolling parts up to 2⅜ in. in dia and ⅛ in. in length, sliding parts of 3/16 to 1¼-in. dia and 3½-in. length, and headed parts of 3/16 to 1¼-in. head dia and 3½-in. length (Jun 17, p202).



PARTS LOADER—*Whitso, Inc, Blow-Loading Div, 9330 Byron St, Schiller Park, Ill.* Freeloader feeds small parts to machining operations. Air pressure introduced into oscillating loading drum forms vortex at each orifice of collecting pattern. As drum oscillates, parts move through vortices until drawn into place. When part enters, it will remain in place until air pressure is released. Loading will generally be accomplished in 30 sec to 3 min (Jun 17, p196).

SPECIAL PARTS FEEDER—*U S Engineering Co, 40-24 22nd St, Long Island City 1, NY.* Modification of company's Feed-A-Matic is adapted to feed 4 rows of No. 12 x 29/32-in.-long studs. Unit is used with automatic stud setter to insert studs into a die casting for automotive industry (Mar 11, p192).

GEAR CLASSIFIER — *National Broach & Machine Co, 5600 St Jean Ave, Detroit 13, Mich.* Red Ring Model GRF automated electronic gear classifier sorts gears into size ranges for assembly operations. Machine is reported to be ideally adapted to production of gears such as those used in planetary and related types of gear sets where equalized backlash and loading conditions are desired in finished assemblies (Nov 18, p196).

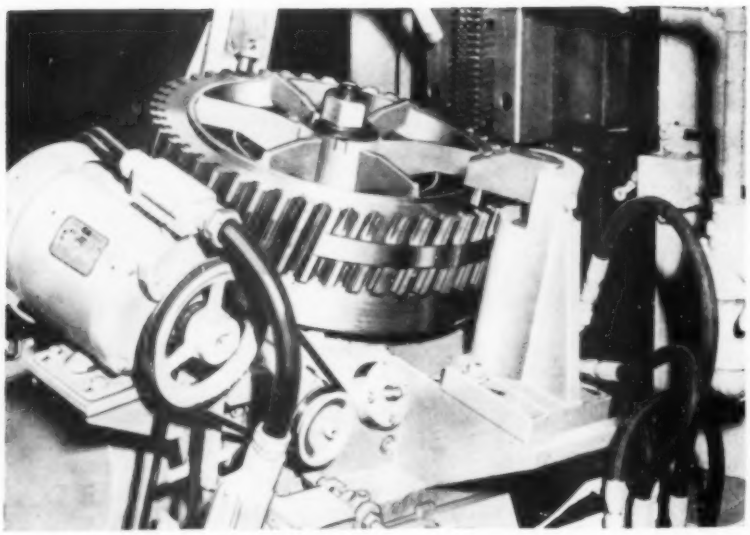


TAPE-CONTROLLED POSITIONING TABLE — *Allison Equipment Co, 710 Wilshire Blvd, Santa Monica, Calif.* Table motion, which is controlled by magnetic tape, is along two perpendicular axes in horizontal plane. Travel at 45° angles to these axes can be produced by electrically connecting two axes during tape recording. Range of motion is 20 x 10 in., and maximum table thrust is 100 lb. Over-all table dimensions are 50 x 35 x 15 in. Separate console, 22 x 19¼ x 48 in. high, contains the tape which controls the table (Feb 25, p190).

POSITIONING TABLE — *Howe & Fant, Inc, East Norwalk, Conn.* Universal positioning table designed for use with company's turret drilling and tapping machine is capable of reproducing any pattern of holes within 10½ x 12-in. rectangle. Table, which can also be used on single-spindle drillpresses and radial drills, will repeat its position within 0.001 in. total variation (Jun 3, p178).

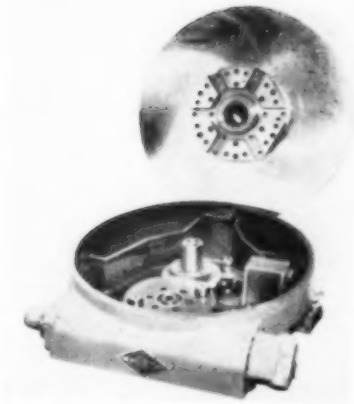
INDEX TABLE — *Lapointe Machine Tool Co, Hudson, Mass.* Rotomatic Positioners can accommodate loads up to 50,000 lb with no noticeable deflection and no change in indexing action. These universal, automatic machines, available in table diameters of 24, 30, 36, 48, 60, 72, and 84 in. in both horizontal and vertical types, are suitable for heavy drilling, milling, boring and inspection operations (Dec 30, p121).

ROTARY TABLES—*Universal Vise & Tool Co, Parma, Mich.* Rotary tables of 9 and 12-in. dia have been added to company's line (AM—Mar 11 '57, p186). Tables can be used horizontally as well as vertically. All models are available with chucks and chuck adapters and with a new tailstock accessory that allows tables to be used more effectively in the vertical position to hold work between centers (Dec 16, p194).

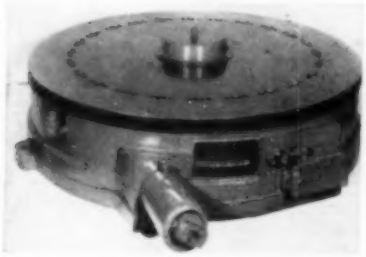


INDENTER MECHANISM — *Micro-Positioner Corp, 716 Wilshire Blvd, Santa Monica, Calif.* Indenting of Micro-Positioner automatic indexing table has been improved: micro control knobs and locks allow complete adjustment of indentation sensing and tape relocating; indenter safety switch prevents accidental indenting (Jan 14, p165).

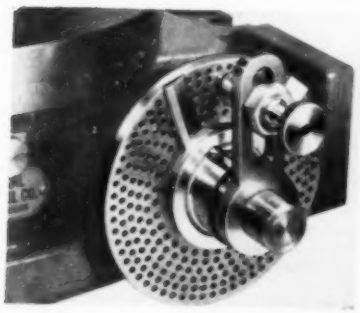
INDEXING TABLE—*Colonial Broach & Machine Co, PO Box 37, Harper Station, Detroit 13, Mich.* Table for positive parts positioning is available in diameters of 11, 8, and 28 in.; all offer infinitely adjustable range of index from 21 to 250 div of a circle. Table provides positive index to tenths without backlash; mechanical self-locking; angular setting (by cradle mounting); and high flexibility (Jul 1, p134).



DIAL INDEX TABLE—*Gray Equipment Co, 13600 Ford Rd, Dearborn, Mich.* Gem 26-in.-dia index table can index loads up to 2000 lb and can be equipped with as many as 12 stations. It is designed to automate drilling, tapping, riveting, spinning, staking, knurling, chamfering, welding and screwdriving machines, gaging devices and other high-volume operations. Index is accurate to ± 0.001 in. on a 24-in.-dia work circle (Dec 30, p127).



INDEX TABLE—*Precision Detroit Co, 20100 Sherwood Ave, Detroit 34, Mich.* Series PDC-AM24 table has 24-in.-dia dial plate, can handle plates up to 36-in. dia. Unit is powered with a start-and-stop rotary air motor drive that indexes in 1 sec, locks accurately to ±0.001 at 24-in. dia, carrying load of 1000 lb (Mar 25, p190).



DIVIDING ATTACHMENT—*Universal Wire & Tool Co, Parma, Mich.* Attachment fits all models of Universal's rotary tables. Divisions obtainable are 2 to 63 inclusive and 27 additional divisions to 100 (others by formula) (Sep 23, p188).

REMOTE POSITIONER—*Lear, Inc, Dept 80, Grand Rapids 2, Mich.* Electrolink reaches max speed in 1/50 sec and is said to be accurate within ½ of one degree. Basic components are data link, which converts manually positioned input into error voltage; an amplifier, which processes signals from data link and velocity signal from servo drive; and servo drive, which provides power output to load (Apr 22, p192).

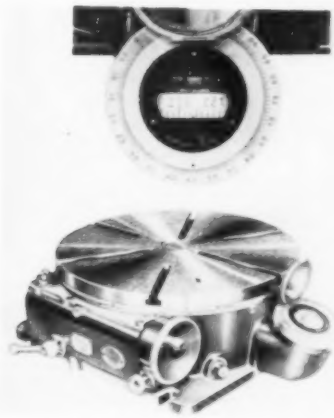
REMOTE POSITIONING SYSTEM—*Bristol Co, Waterbury 20, Conn.* Bristol system is composed of transmitter, amplifier, and receiver. Any form of motion can be transmitted or received, either linear or rotary. Applications include fuel mixture and throttle control on engine test cells, valve operations in process work, and remote manipulation (Mar 11, p196).

INDEX TABLE—*Modern Engineering Service Co, 1695 Twelve Mile Rd, Berkley, Mich.* Jacy digital index table can be controlled either by pushbuttons or by punched tape. Versatility is provided by the digital electronic control of a mechanical index mechanism that permits infinite resolution from 1 to 21,600 divisions of a circle. Available in 18, 24, 36 and 45-in. dia., the table has a mechanical lock with zero backlash (Nov 18, p188).

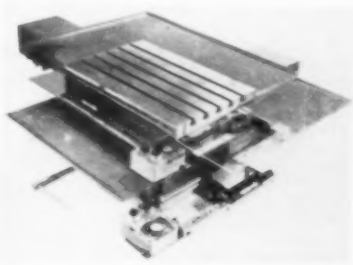
INDEXING TABLE—*Colonial Broach and Machine Co, PO Box 37, Harper Station, Detroit 13, Mich.* Table, used with company's Ram Press line of surface grinders, has a 180° index, is manually fed, automatically unloaded, and features self-locking mechanism actuated by indexing action (Apr 22, p216).

INDEXING TABLE — *Genevamatic Engineering, 404 E Ellamae, Tampa, Fla.* Rotodex has simplified indexing attachment. In 10-in. circle, angle accuracy between one division and next is accurate within 0.0003 in. Indexing attachment eliminates miscounting of turns and incorrect dial readings (Feb 25, p204).

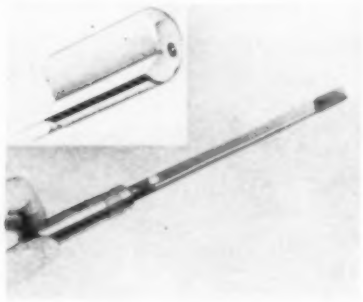
ROTARY TABLE—*Universal Vise & Tool Co, Parma, Mich.* Base of 12-in. table allows both horizontal and vertical operation. Unit's over-all height in horizontal position is 5 in.; weight, 140 lb. One turn of dial gives 4° of circular motion of table (Mar 11, p186).



OPTICAL CIRCULAR TABLE — *Distributed by Engis Equipment Co, 341 Dearborn St, Chicago 5, Ill.* Matrix 18-in. optical circular table is equipped with 2-in.-dia illuminated screen on which direct readings to 3 seconds of arc are clearly visible. Worm-wheel drive provides smooth and uniform rotation of table with minimum backlash (Sep 9, p202).



POSITIONING TABLE — *Industrial East Co, PO Box 561, Clifton, NJ.* Automatic Positioning Spacer Table is low in cost. Drilling and tapping may be performed without jigs; drilling, reaming and boring are done without boring fixtures. For the first workpiece, locations may be established with gage blocks or micrometers. Table top area is 16 x 24 in. Longitudinal travel is 18 in.; cross travel, 14 in. (Dec 2, p158).



CARBIDE GUNDRILLS—*Star Cutter Co, 34500 Grand River Ave, Farmington Mich.* Single flute gundrills are made in two designs. For hole diameters up to 13/16 in. a solid-carbide tip design is used. Drills for holes above this size and up to 1½ in. dia are provided with an insert-carbide tip design having one carbide cutting tip insert and two carbide wear strip inserts (Dec 30, p125).

NYLON DRILL SLEEVES — *James Products Co. Mentor, Ohio.* Sleeves will break under sudden shock, leaving drill intact. They are reported to be equal or superior to metal sleeves in their ability to withstand heavy feeds. Morse taper OD sizes 1, 2, and 3 with a full range of ID sizes are available. These straight shank sleeves are concentric to within 0.002 in. (Nov 18, p218).

DRILLS—*Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Micro drills are manufactured of HSS and ground to exacting tolerances, in sizes from 0.0059 to 0.0394 in. They are available in two types: straight shank spiral flute with RH or LH spiral; and flat flute, with straight shank and RH or LH cut (Oct 7, p195).

COMBINATION DRILL AND REAMER—*Custanite Corp, 1228 Utica Ave, Brooklyn, NY.* Dreamer is a HSS tool designed to reduce production costs by eliminating the necessity of two setups and double handling in drilling and reaming operations. It is available in sizes from ⅛ to ⅝ in. in increments of 1/64 in. Also available is a model made of cobalt alloys for use on stainless steel (Dec 16, p193).

DRILLS—*Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Extra-long drills are available in HSS with straight shank, in wire gage sizes from No. 52 through No. 1 and in fractional sizes from 1/16 to ½ in. Taper shank models are available in sizes from ⅛ through to 1½ in. Max length is 18 in. Special sizes available on request (Jun 3, p174).

CARBIDE DRILL—*Star Cutter Co, 34500 Grand River Ave, Farmington, Mich.* Center-Cut carbide drill, designed to produce precision holes from the solid in applications where a pin is not desirable, is reported to be suited for drilling blind holes; holes that intersect cross holes, recesses, or cored areas; holes in laminated sections; and similar operations where pin disposal presents a problem (Aug 12, p163).

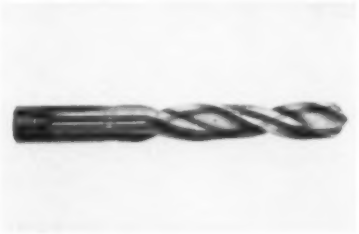
DRILLS—*Ace Drill Corp, Adrian, Mich.* Hi-Brinell line is offered in an extended range of standard stock sizes from 1/16 to ¾-in. dia. Tools up to ⅛-in. dia have solid carbide insert brazed into tool-steel shank. Sizes from 3/16 to ¾ in. are equipped with carbide tip brazed into tool-steel shank with straight flute (Mar 25, p232).

HIGH SPEED DRILLS—*Whitman & Barnes, 40600 Plymouth Rd, Plymouth, Mich.* Fastwist drills are recommended for drilling aluminum, magnesium, copper, die-cast metals, some plastic materials, slate, and marble. Drills are available in taper shank sizes ⅛ to ¾ in., and in straight-shank taper-length wire gage sizes 1 to 60 and letter sizes A to Z (Aug 12, p190).

DRILLS—*DoAll Co. Des Plaines, Ill.* Safety center-drills incorporate radius design which eliminates sharp notch that is fatigue point in ordinary drills. Model D-400R, sizes 1 through 8, is suited for precision work; Model D-400S heavy-duty type, sizes 11 through 18, has larger contact area for use on heavy parts (Apr 22, p216).

DRILLS—*Ritmar Corp, 183 New York Ave, Huntington, NY.* 660 kit contains tools for handling difficult drilling operations. Tools, in addition to making it possible to use broken drills, add 10 in. or more to regular drills. Set is furnished in steel box at $19.75 (Jan 14, p190).

DRILLS—*Air Transport Equipment, Inc. N Albany Ave, Amityville, LI, NY.* Drills made of 18% tungsten HSS are heat-treated to secure hardness without brittleness and to withstand high torque and strain. Each is given max land relief and is micro-finished (Mar 11, p177).



OIL-HOLE DRILLS — *Whitman & Barnes, 40600 Plymouth Rd., Plymouth, Mich.* Designed for use on production runs on screw machines or turret lathes, high-speed oil-hole drills feature continuous holes drilled through the body and shank of tool. Drills are regularly stocked in straight-shank taper-length sizes from 7/16 to 1½ in. by 64ths (May 20, p204).

3-FLUTE CORE DRILLS — *Metal Cutting Tools, Inc, 301 S Water St, Rockford, Ill.* Metcut 3-flute core drills are available in 21 sizes from ¾ to 1⅜ in. Tool consists of drill body and HSS or carbide-tipped replaceable cutter secured by Allen-head capscrew. Cutter can easily be removed from holder without taking tool from spindle (Sep 23, p204).

NYLON DRILL SLEEVE—*James Products Co, 801 Mentor Ave, Mentor, Ohio.* Drill Saver will break instead of drill when drill hits hard spot or air hole and stops. Sleeve, cured for hardness, is unaffected by coolants, oil, gasoline or grease, and comes in sizes 1-2, 2-3, and 3-4 (Mar 25, p214).

DRILLS AND REAMERS—*Elgin National Watch Co, Abrasives Div. Elgin, Ill.* Solid-carbide drills and reamers have been added to company's Golden Circle line of tools. Twist drills range from No. 60 wire gage to ½ in. in dia, and reamers from 0.050 to ¾ in. Tools are for use in plastics, cast iron, and non-ferrous metals (Apr 8, p209).

DRILL AND COUNTERSINK — *Unidapt Co, 945 E 10 Mile Rd, Hazel Park, Mich.* Replaceable at half the cost of double-ended center drill of same size, this tool is ideal for vertical and horizontal boring mills, jig borers and drillpresses. Center drill sizes are ⅛ through ⅝-in. dia; adapter lengths are 3½ through 7½, in standard 1-in. increments (Oct 7, p172).

DRILLS—*Whitman & Barnes, 40600 Plymouth Rd. Plymouth, Mich.* HSS extra-length drills are available in either straight or taper shank styles and in wire gage or fractional sizes. Diameters range from No. 52 wire gage to 1½ in., with over-all lengths to 23½ in. Larger dia and longer lengths can be furnished on request (Jun 3, p176).

DRILLS—*Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Carbide Harduty drills are designed for drilling hardened steels. R_c 40-65. Drills are available in sizes 1/16 through ¾ in. and in sets. Bulletin available (Oct 7, p188).

DRILL-REAMER — *Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Combined drill and reamer makes a piloted hole to be reamed in one operation. Special tools can be made to customer's drawings (Dec 2, p168).

DRILL—*Coffey-Cummins Mfg Co. Pasadena, Calif.* Du-Drill is designed for drilling in hard metals. Tungsten-carbide tip is welded to steel shank; weld is said to withstand any heat that may be generated. Tool will drill within 0.0005 in. in materials between Rc35 and Rc84. Flat-bottom drill is available for turret lathe and automatics (Jun 17, p125).

DRILL BLANKS — *Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Drill blanks are offered in a complete line in fractional, letter and wire gage sizes. Blanks, used for punches, gages, and as stock for special tools, are available in metal case (Oct 7, p167).

DRILLS—*Ace Drill Corp, Adrian, Mich.* Series 333 drills, designed to cut cast iron, are carbide tipped and have special fluting, heavy web, and slow spiral. Drills are stocked by 64ths in sizes from ⅛ to ½ in. and in standard jobber lengths (Jan 14, p164.)

HSS DRILL BLANKS — *Ace Drill Corp, Adrian, Mich.* Offered in 182 standard stock sizes, blanks are reported suitable for knockout pins, punches, dowel pins, gages, and rollers for high-temperature applications (Jan 14, p185).

HSS DRILL BLANKS — *William T Hutchinson Co, 235 Main St, Orange, NJ.* HSS drill blanks, ranging in size from 0.040 to 0.500 in., are available in three sets. Complete package, including jobber set, letter-size set, and wire-size set, contains 115 pieces in all, and sells for $77.33. Blanks have hardness of R.64. Sets may be purchased separately (Sep 9, p213).

DRILL AND REAMER BLANKS — *Lavallee & Ide, Inc, Chicopee, Mass.* Blanks are available from stock in fractional sizes 1/16 in. through 1 in., wire-gage sizes No. 1 through No. 80, and letter sizes A through Z. Blanks are also offered in complete sets (Jan 14, p166).

FACE MILLS — *Bollier-Damerell, Inc, Niagara Cutter Div, 230 Niagara St, North Tonawanda, NY.* Carbide face mills, designed for cutting aluminum, brass, and steel, have integral ¾-in. straight shank, and are offered in 14 models with 1½, 2 and 2½-in. dia cutters, and over-all length of 2⅞ in. Stubby design eliminates need for special adapters or holders and brings cutter as much as 3 in. closer to spindle bearings (Jun 17, p227).

MILLING CUTTERS — *Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* New line of high-helix plain milling cutters, designed for cutting both aluminum and ferrous metals, has a 52° left-hand helix and 12° hook. The high helix angle prevents "hogging in." Cutters are supplied with cutting edge clearance angles suitable for the material being machined. Tools are available in five sizes, ranging from 4 to 8 in. in width (Nov 4, p192).

END MILLS—*Cleveland Twist Drill Co, 1242 E 49 St, Cleveland 14, Ohio.* Two-flute Hy-Spiral end mills are designed for milling nonferrous materials. Available in regular, long and extra-long types, these cutters were designed for aircraft-forging tracer milling, but have been used for several ferrous applications. The regular and long styles are made in sizes from ¼ to 2-in. dia; extra-long cutters, ¾ to 1½-in. dia. (Nov 18, p202).

MILLING CUTTERS—*McCrosky Tool Corp, Meadville, Penna.* Series 900 milling cutters are available with square or triangular indexable carbide inserts, and feature company's Super-Jack blade locking wedges. Cutters are interchangeable with conventional milling cutters. Bulletin 572 available (Jul 15, p192).

END MILLS—*Putnam Tool Co, 2981 Charlevoix Ave, Detroit 7, Mich.* Complete line of standard end mills for milling aluminum includes 2, 3, 4, and 6-flute designs; square-nose and ball-nose types; shell end mills; standard and Postiv-Lok shanks; lengths from 2½ to 11⅝ in.; diameters from ¼ to 6 in. (Jul 15, p196).

END MILLS—*Whitman & Barnes, 40600 Plymouth Rd, Plymouth, Mich.* High-speed cutters have new flute shapes and new type of relief. Series includes single and double-end styles; two, four, or multiple flutes; straight and taper shanks; square and ball-nose styles; small or large diameter; stub, regular, or extra length; heavy-duty types; shell end mills; arbors and end mill holders (Jun 17, p216).

END MILLS—*Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* High-speed mills come in complete range of styles and sizes. Sharp corners have been eliminated for greater strength; flutes are designed so that chips move out freely (Jun 17, p220).

MILLING CUTTERS — *Wesson Co, 1220 Woodward Heights Blvd, Ferndale, Mich.* Cutters, designed to use indexable throwaway carbide inserts, feature single locking mechanism with only two parts—a wedge and a screw. Blades can be indexed to 8 positions before being discarded (Jan 14, p170).

CHANNELING CUTTERS — *Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* Inserted-blade interlocking side milling cutters, designed for channeling of aluminum and magnesuim alloys, are easily expanded to meet slotting width variations. Total adjustment available is 3/16 to 5/16 in., depending on the width of the cutter body. Diameters range from 5 to 16 in. Other sizes available (Dec 2, p148).

END MILLS—*Whitman & Barnes, 40600 Plymouth Rd, Plymouth, Mich.* Fastlead series end mills are designed to cut aluminum and other nonferrous metals. Tools are available in regular and long-length models in diameters of ¼ to 2 in. Extra-long-length mills are standard in diameters of ¼ to 1½ in. Tools perform particularly well in aircraft-forging tracer milling and in slabbing, cavity and deep-pocket milling (Oct 21, p214).

MILLING CUTTER—*Newcomer Products, Inc, Latrobe, Penna.* RC cutter for high-speed milling with company's throwaway carbide inserts features hardened alloy-steel two-piece cutter body, and locking device to hold insert in place. Available in four styles using square or triangular type inserts (Apr 22, p219).

END MILLS—*Fastcut Tool Co, 7405 E Davison, Detroit, Mich.* Fastcut N-Mills made of HSS, up to ½-in. dia, are available in 26 types, including single and double-end, in 2, 3, and 4-flute, and a 2-flute slotting or router bit (Apr 8, p212).

END MILLS—*Brown & Sharpe Mfg Co, Providence, RI.* Heavy-duty end mills with 2-in.-dia shank are available in 2, 3 and 6-flute as well as ball-end styles, and feature polished flutes, high helix and efficient rake angles. An adapter accommodates the new end mills for use on milling machines (Oct 7, p198).

SLOTTING CUTTERS—*Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* Featuring flat-faced blades and staggered tooth arrangement, WAD series cutters, designed for cutting aluminum and other light metals, come in 102 sizes ranging in width from ⅜ to 2 in., and in dia from 4 to 16 in. Wedges hold blades in cutter body. Axial blade serrations allow easy width settings (Mar 25, p200).

END MILL—*DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* Controlled-Penetration end mill is said to provide exceptional accuracy and long life for cutting titanium, stainless steel, and similar alloys. Grooves across flutes produce small ridges of material directly in path of each tooth to faciliate penetration of cutting edges into material. Tool is available in sizes from ⅜ to 1½ in. (Jul 15, p198).

CUTTER WEDGE—*Beaver Tool & Engineering Corp, Royal Oak, Michigan.* Eager Beaver face milling cutters have wedges designed to accept solid carbide or carbide-tipped blades in same cutter body. Same cutter may be used to cut steel, cast iron, brass, bronze, aluminum and magnesium (May 6, p214).

END-MILL ADAPTERS—*Goddard & Goddard Co, Detroit 23, Mich.* Designed to accommodate series of 1½-in.-shank-diameter end mills for aluminum and its alloys, adapters are standard for No. 50 NS drive machines. Two set-screws firmly hold the straight-shank end mills (Jan 14, p172).

MILLING CUTTER—*Vascoloy-Ramet Corp, Waukegan, Ill.* Face milling cutter uses economical throwaway inserts which need no re-grinding, as they are used until dull and then discarded (Oct 21, p204).

SLOTTING CUTTERS—*Apex Tool & Cutter Co, Shelton 10, Conn.* New style cutters feature tapered, serrated, self-locking blades forged of selected HSS. Reinforced bodies are forged of nickel-alloy steel. Ground blade faces and ample chip room result in a free-cutting action superior to other blades. Replaceable blades are available in any dia from 3 to 24 in., and widths from 3/16 to ¾ in. (Oct 7, p180).

MILLING CUTTERS — *Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* Line of inserted-blade plain milling cutters for machining aluminum provides twice the normal grinding life of inserted blades. Cutters come in 4-in.-wide right- and left-hand sections. They are recommended for use in gangs made up of equal numbers of r-h and l-h sections. Cutters come in diameters ranging from 8 to 11 in. (Nov 18, p190).

MILLING CUTTER—*Arrow Tool & Reamer Co, 711 Stephenson Highway, Troy, Mich.* Rout-R-Mill is designed for deep cavity milling of titanium, stainless steel, aluminum, and other alloys. It performs rough hogging cuts and finish cuts in one operation. Tool can be used at speeds to 17,000 rpm, and at much higher feed rates than ordinary end mills (Jun 17, p184).

END MILL—*Weldon Tool Co, 3000 Woodhill Rd, Cleveland 4, Ohio.* Ski-Kut end mills, designed especially for cutting aluminum, have narrow primary-flute face which is said to reduce adherence of chips to flute face. Helix angle of 45° makes possible a smoother shearing action. End mills are available from stock in sizes from ¼ to 2 in. in various lengths (May 20, p200).

SHELL END MILLS—*Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* WND Series, designed for aluminum and light-metal alloys, is offered in diameters from 3 to 8 in., widths from 1⅝ to 2 in., and in either RH or LH cut. Serrated wedges lock cutter body and blades, which can be set out radially in 1/16-in. increments for diameter maintenance (Mar 25, p214).

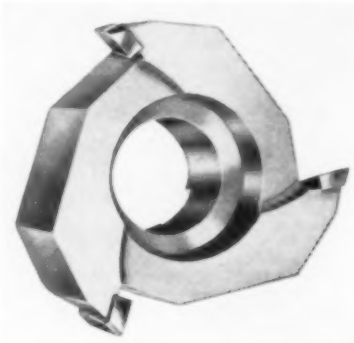
END MILLS—*Goddard & Goddard Co, 12280 Burt Rd, Detroit 23, Mich.* End mills have helical, carbide cutting edges formed by special process that produces true helix with a constant positive rake for entire length of tooth face. This permits higher feeds and speeds when milling cast iron and light-metal alloys. Standard diameters range from ⅜ to 2 in. (Aug 26, p174).

SPACING COLLAR—*Dayton Rogers Mfg Co, 2824 13th Ave S, Minneapolis 7, Minn.* Micrometer-adjustable spacing collar is designed for spacing of side milling cutters, gang milling, and various other multiple setups on milling machines and other equipment. Collars are calibrated to 0.001 in., and are available in sizes from ⅝ to 3 in. for standard cutter arbors. Prices from $12.75 to $19.50 (Aug 26, p153).

MILLING CUTTERS—*Barber-Colman Co, Rockford, Ill.* Side-milling cutters with interlocking staggered-teeth have trailing edge of leading section always slightly ahead of leading edge of trailing section. Cutters are recommended for long, deep slotting cuts in steel, shoulder cuts, and for operations where depth of cut exceeds width of cutting face (Jun 3, p180).

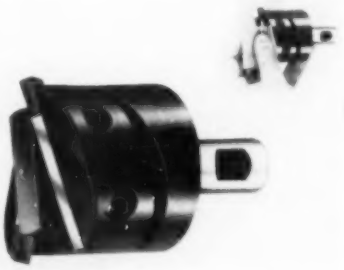
CARBIDE END MILLS—*Rotary Tool Industries, Inc, Dept AM, 4461 W Jefferson Ave, Detroit 9, Mich.* Complete line of carbide end mills is available with B & S tapered steel shanks, in either draw-bar or tang types. Carbide is inserted into steel shank and brazed. Tools are furnished in square-end or ball-nose types, with either RH or LH spirals (Sep 9, p198).

END MILLS—*Goddard & Goddard Co, 12280 Burt Rd, Detroit, Mich.* Straight-shank end mills with carbide-tipped insert blades are offered in diameters from 1 to 2½ in.; length of cut is 1½ or 2 in.; shank lengths from 2¼ to 3¼ in.; shank diameters from 1 to 2 in. Right-hand cut is standard. Cutter dia can be increased in 1/32-in. increments by moving blades (May 6, p213).



SHELL END MILLS—*Nelco Tool Co, Inc, Manchester, Conn.* Group of Series 400, 3-flute carbide-tipped shell end mills are designed for face milling aluminum, magnesium, brass or bronze alloys, and plastic materials. Three-tooth design allows more room for chip flow, and the tooth construction results in superior finish on soft materials (Jul 1, p138).

T-SLOT CUTTERS—*Quality Tool Works, Waukegan, Ill.* Tools made of HSS can be furnished with chipbreakers ground on teeth to reduce chip size. Cutters range from ¼ to 1½-in. bolt size. Carbide-tipped units are made to order (Apr 22, p207).



MILLING CUTTER—*Portage Double Quick, Inc, 1026 Sweitzer Ave, Akron 11, Ohio.* Face mill cutter, designated Manchester, can take a 2½-in.-dia cut. Shear cutting action of double inserts offers fast, yet unusually well finished surface. Tool is available with ¾ or 1-in. shanks. Tool setting gage is supplied with each cutter (Sep 9, p206).

ACME TAPS—*Horspool & Romine Mfg Co, Inc, 5850 Marshall St, Oakland 8, Calif.* Single-pass taps are available in range of sizes from ⅜ to 2½ in. They feature built-in leadscrew thread which eliminates need for external leadscrew and permits complete Acme tapping with one tap in one operation (Mar 25, p227).

TAP BUSHINGS—*Beaver Tool & Engineering Corp, Royal Oak, Mich.* Bushings accommodate 13 tap sizes, reduce breakage and make possible close-tolerance tapping on lathes, millers, tapping machines, and drillpresses. No special drivers are needed if tool has 1¼-in. hole. Bushing socket engages square of tap shank (May 20, p220).

TAPS—*Union Twist Drill Co, S W Card Div, Mansfield, Mass.* No. 3027 taps for use in cast iron and brass are available in sizes from ¼ to ½ in. in coarse pitches, made to standard GH3 limits, in taper, plug, and bottoming styles (Jul 15, p204).

TAP—*Besly-Welles Corp, South Beloit, Ill.* Strate-Face has specially designed flute and core which make it particularly adaptable for tapping cast iron. Tool is available in standard ground thread sizes from No. 6 through ¾ in. (Apr 22, p212).

STUB TAP—*Pratt & Whitney Co, Inc, West Hartford 1, Conn.* Tool has necked shank for generous lubrication; spiral point to reduce torque and improve chip disposal; and short thread length to prevent bellmouth threaded holes. Available in HSS ground thread, NC or NF, plug or bottoming chamfer, in No. 2 to 10 machine screw sizes to GH2 limits (Feb 25, p216).

SPIRAL-FLUTED TAPS — *Sossner Tap & Tool Corp, Lynbrook, NY.* New styles added to company's line of taps include two distinctive styles of 2-flute spirals in machine screw sizes and in ¼ and 5/16-in. sizes, and 3-flute spirals in ¼ and 5/16 in. sizes for tapping ferrous metals where extra strength is needed (Sep 9, p188).

THREADING AND HOBBING TOOLS—*Imported by Eric R Bachmann Co, Inc, 27-11 41st Ave, Long Island City 1, NY.* German firm of Piltz & Sohn offers line of high precision hobs from 32 to 250 DP, a series of ring and plug gages, micro taps, thread chasers, and knurling tools (Apr 22, p220).

TAPS AND THREAD MILLING CUTTERS—*Detroit Tap & Tool Co, 8615 E Eight Mile Rd, Baseline, Mich.* Cutters designed for threading abrasive materials such as aluminum, magnesium, and plastics are available in solid carbide or shell-type carbide-tipped models (Jun 17, p230).

ACME TAP—*Regal Division, Beloit Tool Corp, Beloit, Wis.* Unipass tap produces Acme threads in single pass without leadscrew. Roughing section has thread with a greater included angle. Threads can be relieved more effectively, wide flat Acme crest is eliminated (May 6, p196).

TAP—*Sossner Tap & Tool Corp, Lynbrook, NY.* Elektra-Lube is processed so that a thin ductile deposit is imparted which acts as lubricant. Under working pressures, deposit imbeds itself into microscopic pores of ground tap, resulting in smooth burnished surface, freer cutting, and reduction in torque (May 20, p216).

BORING BARS—*Kennametal, Inc, Latrobe, Penna.* Styles KA and KB are designed for use with turret lathes, and feature throwaway button inserts. Tools are available in 6 sizes in each style. Style KA, without lead angle, is used for boring to square shoulder. Style KB has 15° lead angle for straight-through boring operations (Apr 8, p208).

BORING BARS—*Wendt-Sonis Co, Hannibal, Mo.* No-Chat boring bars are said to have greater rigidity and resistance to deflection. In addition, manufacturer claims that speeds and feeds can be increased, and bars can be used with greater overhang for deep hole boring. Seven sizes up to 12 in. long are available. Cutters are ground from solid carbide (Jun 3, p176).

BORING BAR — *Jancy Engineering Co, 508 S Pine St, Davenport, Iowa.* Roto-Bor, for use on light-gage metals and fiber boards, is offered in 54 sizes covering range of 3/16 to 19/32 in. No torque is developed by tool, and work may be hand held. Tool operates in portable or stand drills at twist-drill speeds (Jan 14, p188).

DOUBLE-END BORING BAR—*Kennametal Inc, Latrobe, Penna.* Double-end boring bar is encased with Kennametal hard tungsten carbide to reduce chatter and reduce the cost of precision boring. Bar has 1¾-in. square cross-section and is about 14 in. long. Square inserts are used on one end, triangular on the other end (Nov 18, p200).

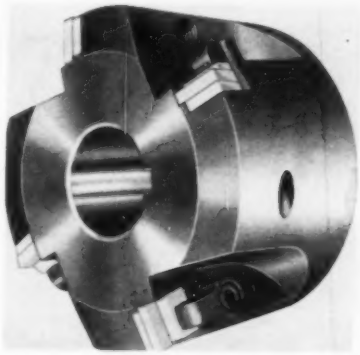
BORING BAR—*Pensco Products, 527 Lexington Ave, New York 17, NY.* Bar called Silent Sam is bored out from both ends and filled with shock absorbing material to produce a chatterless bar. Tool is graduated each quarter inch. Smallest bar is ½-in. dia, 10 in. long and takes 3/16 x 3/16-in. toolbit; largest of 12 available sizes is 4-in. dia, 28 in. long and takes 1 x 1-in. toolbits (Jul 15, p186).

BORING BARS AND BITS—*Maxwell Industries, Inc, Macedonia, Ohio.* Boring bars made of tool steel are available with four flats and straight or angular square holes and come in standard sizes from ½ to 1½-in. dia. Forged bits range in size from ⅜- to 1-in.-dia shanks with boring capacity starting at ¼ in. (Mar 25, p214).

BORING TOOL—*Wesson Co, 1220 Woodward Heights Blvd, Ferndale, Mich.* Micro-adjustable boring tool using throwaway inserts combines multi-dia boring and chamfering operations. Each insert is locked on adjustable anvil; each division of screw-dials represents 0.001 in. on dia. When inserts are dull, they are indexed to new cutting edge or interchanged (May 20, p195).

BORING BAR—*Buck Tool Co, 2015 Schippers Lane, Kalamazoo, Mich.* Screw on side of cutter provides easy adjustment to tolerances as precise as machine spindles permit. Rigidity of bar enables it to hold fine adjustment, bore deeper holes to full bar length, and minimize tool drag marks. Standard capacities are from 25/32 to 6¼ in. in 30 sizes (Jun 17, p188).

BORING BAR—*Kennametal Inc, Latrobe, Penna.* Tool uses Kendex triangular button inserts, comes in sizes ranging from 1½ to 2½-in. shank diameter. Carbide inserts are available in ⅜ and ½-in. inscribed circle sizes (Mar 25, p194).



BORING HEAD—*Kennametal Inc, Latrobe, Penna.* Kendex, designed to bore engine cylinders, uses four ½-in.-sq Kennametal turn-over button inserts that have eight indexable cutting edges each. Shims assure positive insert seating (Mar 11, p186).

BORING BARS—*Wesson Co, 1220 Woodward Hts Blvd, Ferndale, Mich.* Micro-adjustable boring bars enable operator to transfer from turning to threading or facing operation, or from one requiring triangular inserts to another job requiring round or square throwaways. Complete tool change requires only interchange of standard anvil (Apr 8, p182).

BORING HEAD—*Precision Tool Mfg Co, 1305 S Laramie, Cicero, Ill.* Deka-Bore is so rigidly constructed that roughing tool in the front of the quill will remove stock from a cast hole and finishing tool will follow behind, holding a tolerance of 0.0003 in. Tool can be adjusted to 0.0001 in. on diameter without backlash. Unit can be made as short as 1½ in. (Oct 7, p176).

BORING TOOLS — *Beaver Tool & Engineering Corp, 500 W County Rd, Gaylord, Mich.* Boring tools, designated Calibore, are easily adapted to multiple or cluster bar applications. They are available in 26 sizes, from ¾-in. bore on up, and are made for 53° angle or 90° perpendicular mountings in boring bars. Adjustment increments are direct reading to 0.0005 in. (Dec 16, p167).

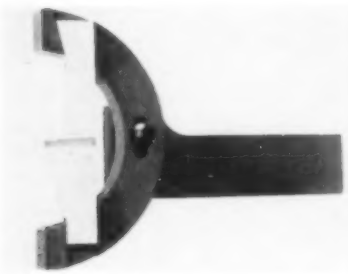
CARBIDE-TIPPED REAMER—*Star Cutter Co, 54500 Grand River Ave, Farmington, Mich.* Starbore reamer, which combines advantages of gun drill with those of carbide reamer, has molded solid-carbide tip brazed to tubular steel shank. Coolant under pressure is directed through shank into both flutes to provide adequate cooling of cutting surfaces as well as chip flushing action. Available in either straight or taper-shank models (Jun 3, p166).

CARBIDE CHUCKING REAMERS—*Super Tool Co, Div of Van Norman Industries, Inc, 21650 Hoover Rd, Detroit 13, Mich.* Tools feature solid-carbide flute sections. Advantages claimed are reduced chatter, longer productive life between grinds and less chance of breakage. These straight shank tools are available in decimal sizes 0.230 to 0.760 in. and fractional sizes ¼ to ¾ in. (Dec 16, p196).

CHUCKING REAMERS — *Atrax Co. 240 Day St, Newington, Conn.* Series 1564-R solid-carbide chucking reamers come in 21 sizes, ranging in diameter from 1/16 to ⅜ in. These RH-spiral reamers have straight shanks, radius chamfer and right hand cutting. Sizes 1/16 through ¼ in. are four flute; from 7/16 through ⅜ in. are six flute (Dec 16, p170).

SOLID-CARBIDE STUB REAMERS —*Rotary Tool Industries, Inc, 4461 W Jefferson, Detroit 9, Mich.* Stub reamers for screw machines have a solid-carbide reamer portion brazed into hardened and ground steel shanks. They are available in sizes from 0.060 to 0.510 in. Sizes from 0.060 to 0.115 in. inclusive have a 45° cutting chamfer; larger sizes have a standard radius chamfer (Nov 4, p198).

CUTOFF TOOL — *Criterion Machine Works, 765 W 16 St, Costa Mesa, Calif.* Carbide-tipped blades are available for company's cutoff tool. Tool can be purchased with blades, or blades can be purchased separately. Two new models have also been introduced: a 4-in.-dia.-capacity tool is available in a heavy-duty model, and a 6-in.-dia.-capacity model has been added to line (Jul 1, p142).



CUT OFF TOOL—*Wye-Stanley Tool Co, 3503 E Olympic Blvd, Los Angeles 23, Calif.* Speedway cutoff-tool assembly eliminates overhang problem by supporting cutting edge by tension instead of bending moment. This permits use of much thinner blade in relation to depth of cut. Cuts up to 4½ in. require a blade thickness of 0.095 in. (Apr 8, p190).

CUTOFF TOOLS—*Wendt-Sonis Co, Hannibal, Mo.* Carbide-tipped cutoff tools are available with shanks made of "No-Chat" metal which is reported to reduce tool vibrations as much as 50%. Greater heat conductivity permits cooler running, longer life. Tools are available in nine sizes from 3½ to 6 in. in various tip widths (Jul 1, p135).

FORGED HSS TOOLS — *MacInnes Steel Sales Co. 202 Marine Bank Bldg, Erie, Penna.* Forged, high-speed-steel tools, designated Mac-I tools, are heat treated to proper hardness and sandblasted to eliminate roughness. Hardness obtained is in range R,62-64 (Sep 9, p209).

ROUND BROACHES—*DuMont Corp, Greenfield, Mass.* Tools can be used with hydraulic presses or shop arbor presses. These push-type broaches, which eliminate chatter marks, rings and run-out, are available as stock items in 13 sizes (Dec 2, p150).

PUSH BROACHES—*Shearcut Tool Co, 7045 Darby Ave, Reseda, Calif.* Dual-purpose push broaches can be used as conventional push broaches in punchpresses, hydraulic presses and lathes; also as rotary broaches in finishing long holes. Tools have multiple spiral flutes and remove from 0.005 to 0.015 in. of stock in hole finishing. Sizes range from ⅛ to 1 in. in increments of 1/32 in. (Mar 25, p217).

HONING TOOL—*Barnes Drill Co, 830 Chestnut St, Rockford, Ill.* Hardened-steel inserts form two sides of quick-loading honing tool. Inserts reduce wear and allow shop maintenance of tool body. Range of the plate-type tool is from 1½-in.-min ID to 5-in.-max ID. Stone lengths are from 3 in. min to 5 in. max (Jul 29, p154).

LAPPING TOOL—*Perfectole Industries, Riverdale Station, Box 86, Dayton 5, Ohio.* Tool called Marvelap is said to respond to very fine size adjustment. Sizes range from ⅛ to ¼ in. by 32nds. Prices range from $0.75 to $1.05. The adjustable head provides positive adjustment of lap diameter and torque. Head is priced at $87.50 (Dec 30, p130).

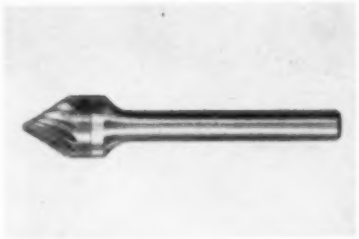
TUBE DEBURRING TOOL—*Genessee Manufacturing Co, 566 Hollebeck St, Rochester 21, NY.* Tube deburring tool is available for tubing with OD's from 3/16 to 1¼ in. It is designed to face the end and chamfer inside and outside of standard tubing in one operation (Sep 9, p196).

TOOLBIT—*Severance Tool Industries Inc, 726 Iowa St, Saginaw, Mich.* Ecarno-Mill, featuring right-hand double cut with a left-hand spiraled tooth, is made of solid carbide, and recommended for working materials beyond scope of regular HSS rotaries in applications such as die, mold, and pattern work, deburring, blending, and elongating. Tool will work abrasive plastics, aluminum, and magnesium (Feb 25, p212).

CHAMFERING TOOL — *Falcon Tool Co, Ryan Rd, Detroit 24, Mich.* Tool, for use in radial or drillpress, chamfers and deburrs holes in walls of tubing or pipe. Device produces holes from ⅜ to 3-in. dia in round parts with dia from 1 in. on up. Any width of chamfer can be produced, from 0.005 in. up, with any degree of angle, form, or radius; also true concave or convex surface inside hole (May 6, p178).

DIAMOND TOOLS—*Craine-Schwartz Diamond Tool Co, 8100 Lyndon, Detroit 38, Mich.* Tools, shaped to produce the "pine tree" and other root sections of jet blades and buckets on two-wheel precision form grinders, use triangular-shaped macle diamond, held in tool shank by powdered-metal matrix material (May 20, p195).

HOLE-GRINDING BURS—*Atrax Co, Newington, Conn.* Miniature burs, series 1903, designed for grinding small holes in steel up to Rockwell C-64, remove up to 0.006 and 0.008 in. of stock with finish of 2 mu-in. There are 17 different tools in series, all on ⅛-in. shank (Mar 11, p186).



COUNTERSINK BUR — *Atrax Co, Newington, Conn.* Countersink-type solid-carbide bur with right-hand spiral flutes reportedly produces mirror ground finish. Test using new bur (M-shape) to countersink ¼-in.-dia holes in hardened die steel, R,62-63, are said to have proven it far superior in speed and surface finish to other tools. Bur was used at 300 rpm (Jul 1, p148).

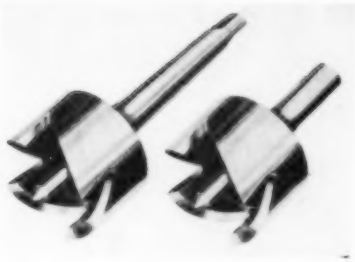
CHAMFERING TOOL—*Vernon Devices, Inc, 481 E 3rd St, Mt Vernon, NY.* Burr-Bit slips over tap, deburrs hole as tap is being withdrawn. Adjusted to varying web thicknesses of tap by Nylock set-screw inside flute, device fits all two and four-fluted taps from No. 2 to ½ in. in all pitches (May 6, p194).

RECESSING TOOLS—*Maxwell Industries, Inc, Bedford, Ohio.* JF Series tools are designed for automatic chamfering of both sides of drilled or reamed holes. Tools utilize rack and gear as actuating mechanism. Circular form cutters are employed (Apr 8, p172).

SOLID-CARBIDE ROUTERS—*Atrax Co, Newington, Conn.* Tools for use on plastics, bakelite, die castings, copper, bronze, brass, and aluminum come in standard sizes in all types: single straight flute, single RH or LH spiral, and 2 or 3-flute spirals (Feb 11, p172).

DEBURRING TOOL—*Nobur Mfg Co, 6860 Farmdale Ave, N Hollywood, Calif.* Tool deburrs and chamfers both front and back sides of holes. Unit can be used in mechanized or automated machine tool, or manually in conventional drillpresses and in sequence with drilling operations. It is available for hole sizes ranging from ¼ to ⅝ in. and for working depths from 1½ to 3¼ in. (Oct 21, p218).

PILOT COUNTERBORES — *Fastcut Tool Co, 7405 E Davison, Detroit 12, Mich.* Continuous pilot counterbores are available for USS capscrews No. 6 up to ⅝ in. They are made of high-speed tool steel and heat treated for max wear resistance. As tool wears, cutter body may be re-sharpened; pilot length may be cut off as required (Nov 4, p204).



HOLE CUTTER—*Jancy Engineering Co, 508 S Pine St, Davenport, Iowa.* New Roto-Bor, utilizing four cutting lips, is counter-bored to increase its cutting speed, cutting depth, and ease of re-sharpening. Cutters, available with No. 2 Morse taper shanks in the sizes from 1 to 1 9/32 in. and with No. 3 Morse taper shanks in sizes from 1 5/16 to 2 1/32 in., are also available with ½-in. straight shanks (Oct 21, p216).

RECESSING TOOL—*Maxwell Industries, Inc, Macedonia, Ohio.* Tool is used to machine internal annular grooves in breech-block mechanism of atomic reactors. Tool, designed for use in radial drills, boring mills, and milling machines, may also be used on any other large workpiece requiring internal forming (Aug 26, p170).

OXIDE CHIPBREAKER—*Diamonite Products Mfg Co, Canton, Ohio.* Tool designed for use with oxide cutting tools provides the resistance to abrasion and cratering necessary to maintain uniform chip control. Because of low coefficient of friction and low thermal conductivity, friction heat is practically negligible (May 20, p212).

SOLID-CARBIDE INSERT — *Willey's Carbide Tool Co, 1540 W Vernor Hwy, Detroit 1, Mich.* Pentagon insert has ten cutting edges and offers a 30° lead angle which reduces shock to the tool nose. By reducing the end cutting edge angle to 12° a greater volume of carbide backs up the cutting edge. The new toolholder, designated Wil-Dex, has a positive lock clamp for the insert and chipbreaker (Dec 2, p149).

CUTTING TOOLS — *Metal Cutting Tools, Inc, 301 S Water St, Rockford, Ill.* Tools feature a "taper-torque" drive which is reported to provide greater load carrying capacity. Taper design of shanks assures accurate positioning and alignment of tool in matching holder without exerting any driving force on it. Tools and holder are made to specification. Five sizes of holders will accommodate cutters from ¾ through 3⅜ in. OD (Dec 30, p125).

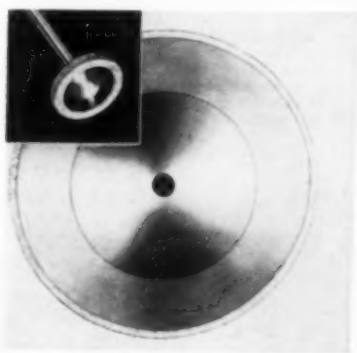
CARBIDE TOOLS — *Super Tool Co, 21650 Hoover Rd, Detroit 13, Mich.* Chatterless, single-flute, solid-carbide countersink is available in ⅜, ½, and ¾-in.-dia, all ¼-in. shank with 82° taper (standard 60° taper furnished to order). Single-flute, solid-carbide center laps, in same sizes as countersinks, are offered with 60° taper. Lower priced line of chucking reamers is available in decimal and fractional sizes from ¼ to ¾ in. (Dec 2, p154).

THROWAWAY INSERT TOOLS — *Kennametal Inc, Latrobe, Penna.* Large triangular carbide inserts, ⅝-in. inscribed circle and ¼-in. thick, are used in three styles of holders. Styled KTD-86A holders are for heavy plunge cutting on tracer control or automatic lathes. Style KTF-86A is for turning or facing to a square shoulder. Style KTG-86A is an offset tool for shaft turning or facing to a square shoulder (Nov 18, p188).

MULTIPLE GROOVING TOOL — *Kennametal, Inc, Latrobe, Penna.* Tool has 12½-in.-dia button inserts and 8-in.-long steel plate that backs up inserts to insure groove spacing when inserts are indexed to new cutting edges (Jan 14, p183).

CARBIDE-TIPPED SAW BLADES—*Victory Carbide Saw & Tool Co, 3856 N Ashland Ave, Chicago 13, Ill.* Blades with Penta-Cut teeth are designed for cutting non-ferrous metals. Carbide tips are of alternate design to provide group of five cutting edges in every set of two teeth. Blades are easily sharpened, and are available in 12, 16, 18 and 20-in. dia (Mar 25, p227).

HACKSAW BLADES — *Ladish Co, Cudahy, Wis.* HSS power hacksaw blades are available in sizes 12 to 30 in. long, 1 to 2½ in. wide, 0.050 to 0.100 in. in thickness, with 3, 4, 6, 10, and 14 teeth per in. (Dec 30, p139).



DIAMOND COATED SAWS — *O'Rourke Diamond Co, Inc, 11423 Van Owen St, North Hollywood, Calif.* Saws are specially designed for cutting all types of reinforced plastics. They are available in over 100 different types, both mounted and unmounted, in diameters up to 24 in. (Dec 16, p166).

CIRCULAR SAW LINE — *Simonds Saw & Steel Co, Fitchburg, Mass.* Chrome-plated Si-Clone saws are available in nine types with choice of round, square, oblong, or diamond shape centerhole. Furnished up to 12 in. in diameter inclusive. Catalog B (Dec 30, p140).

BANDSAW BLADES—*Heller Tool Co, Newcomerstown, Ohio.* Metal-cutting blades in Job Tempered line are available in both hard edge standard steel and HSS, standard tooth shape, skip tooth blades, and hook tooth saws. Blade widths are from ⅛ to 1 in.; they are packaged in 100 and 250-ft coil lengths, or cut to length (Jun 3, p170).

CARBIDE-TIPPED SAW BLADE—*Forrest Mfg Co, Inc, Box L, Rutherford, NJ.* Blade for cutting-out of critical areas of castings or molds for stress, strain, warp, and other testing, and for cross-sectional inspection cuts a wide range of materials including polyvinyl chloride, polystyrene, hard rubber, copper-plated printed circuit laminates, and light metals and alloys (May 20, p223).

SAW BLADE—*Price & Rutzebeck, PO Box 30, Hayward, Calif.* Saw blade for cutting stainless had been designed for use with Keesling-developed Handy Angle reciprocating saw. Five sizes of Supreme Blades are available in the "bayonet" design with teeth per inch specifications of 10, 14, 18, 24, and 32, and usable cutting length of 1⅝ in. Price is $1.10 per blade, or $11 per dozen (Dec 2, p168).

CUTOFF WHEELS — *Quick Shear Wheel Co, Dept CC3, 5240 Winona St, Chicago 30, Ill.* Quick-Shear wheels are designed for use on all rotary pipe and tube cutoff machines, and are available in all standard sizes. Manufacturer guarantees R, 55-56 hardness for each wheel, and claims them to be practically chip-proof. A 6-in.-dia. ⅛-in.-thick double-bevel wheel in a 1½-in. bore lists for $5.50 in lots of six (Aug 12, p166).

TAP-DRILL STAND — *Zagar, Inc, 23886 Lakeland Blvd, Cleveland 23, Ohio.* Stand holds drills from 11/16 through ½ in. Next to each drill is hole for the respective tap. Stand is 4½ in. in dia and has felt bottom. Price is $2 (Sep 9, p186).

MINIATURE DRILL UNIT—*Ritmar Corp, 185 New York Ave, Huntington, LI, NY.* Tool called Mindril has a special gripping mechanism which permits easy changing of dull or broken tools. Mindril is designed to hold individual drill sizes ranging from #80 to #57 or 1/64 to 1/32 in. Diameter of tool is ⅛ in., allowing it to be used conveniently with drill bushings (Nov 4, p194).

POWER HACKSAW BLADES—*E H Wachs Co, 1525 N Dayton St, Chicago 22, Ill.* Guillotine DuWeld Pro-Set blades incorporate progressive tooth setting in which tooth and gullet capacities are identical in size, but with amount of set increasing in infinite degrees from starting to finishing ends. New set reduces initial impact at start of cutting stroke approximately 50%; metal is smoothly displaced instead of being hogged out (Nov 18, p220).

NYLON-TUBING TOOLS—*Imperial Brass Mfg Co, 1200 W Harrison St, Chicago 7, Ill.* 300-FP flaring tool makes 45° flares on six sizes of nylon tubing between 3/16 and ⅝-in. OD. 227-FP tube cutter will cut nylon or similar tubing from ⅛ to ¾-in OD. Cutter should not be used with metal tubing (Mar 25, p228).

DIE-HOLDERS—*Mohr Tool & Mfg Co, Box 63, Maywood, Ill.* Die holders will cut 18 threads ⅛ to ⅛ in. in USS and SAE, plus ⅛ and ¼-in. pipe threads. Can be used on lathe, drill-press, or as a hand tool, as dies are always set in holder ready for use (May 20, p194).

GRINDING WHEELS — *Carroll Pressed Metal, Inc, Worcester, Mass.* New type of grinding wheel mounting eliminates need of reinforcing rings, pronged anchor bushings, and the use of individual mounting nuts. Grinding compound is locked in at three points—between the extruded prongs and the outside guard, and between prongs and center nuts (Nov 4, p192).

MOUNTED WHEELS—*Carborundum Co, Bonded Abrasives Div, Niagara Falls, NY.* Line of mounted wheels, incorporating V40 bond, is available in all standard shapes and sizes and in a complete range of gradings to meet all precision grinding requirements. Units can be supplied with hard, nickel plated mandrels in variety of sizes to fit various chucks (Sep 23, p192).

GRINDING WHEELS — *Raybestos-Manhattan, Inc, Manhattan Rubber Div, Abrasive Wheel Dept, Passaic, NJ.* Reinforced grinding wheels featuring new Safety Back design are said to be safer because steel covers entire back, and extends down side to add reinforcement. No more of wheel is covered than with revolving cup guard (May 20, p226).

VITRIFIED GRINDING WHEELS—*Electro Refractories & Abrasives Corp, Buffalo, NY.* 20-Structure wheels are designed for improved chip clearance, resistance to loading, and elimination of burning or distortion. Available in aluminum oxide or silicon carbide, wheels can be used on steels, carbides, brass, aluminum, copper (Jan 14, p188).

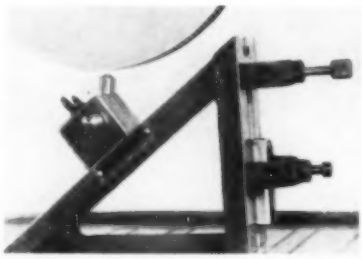
GRINDING WHEEL — *Nu-Matic Grinders, Inc, 8224 Carnegie Ave, Cleveland 3, Ohio.* Series of separate, replaceable rubber segments called flexers grip coated abrasive belt and form grinding surface of grinding wheel called Flexcore. Wheels are made to any specified width and come in 3, 4, 5 and 6-in. diameters. Also available are three additions to line of inflated grinding wheels (Apr 22, p194).

GRINDING WHEELS—*Electro Refractories & Abrasives Corp, 344 Delaware Ave, Buffalo 2, NY.* Glass-fiber reinforced resinoid type wheels come in two new models: one is a foundry cutoff wheel available in diameters up to 20 in.; other is depressed-center-type wheel that comes in 7- and 9-in. diameters (Mar 11, p178).

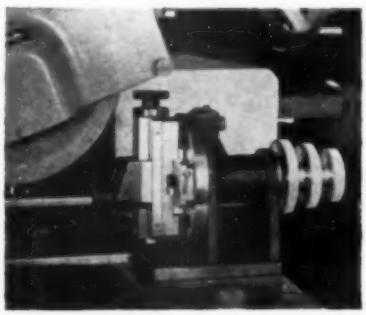
DIAMOND DRESSER—*Cleveland Industrial Tool Co, Skaneateles, NY.* Diamond dresser, Citco Turnit, can be turned with ordinary hand wrench, eliminating removal of diamond tool. Tool has hardened and ground steel shank, beryllium-copper head; shank diameters are ¼, ⅜, and 7/16 in. (Jan 14, p162).

DIAMOND WHEEL CLEANERS — *Cratex Mfg Co, 81 Natoma St, San Francisco 5, Calif.* Cratex rubberized abrasive blocks do a faster and more effective job of cleaning metal-bonded diamond wheels than previous methods. Because of its cushioned action, block "flows" around diamond particles, cleaning away smear metal with little danger of knocking particles loose (Aug 26, p182).

FLUTE GRINDER—*Edward Blake Co, 437 Cherry St, West Newton 65, Mass.* Unit is equipped with air-operated vertical slide; operator merely controls depth of grind. Older units with hand-operated vertical feed can be converted at factory (Jan 14, p190).

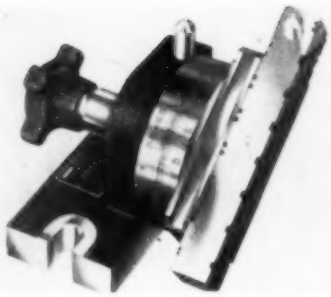


DRESSER—*Dover Machine Sales Co, 140 Dover St, Boston.* Inclined-plane dresser for surface-grinder wheels allows adjusting diamond to wheel height without fussing with fine wheelhead feed. Attachment on vertical leg will grip small tools and punches so several can be ground to same height (Feb 25, p192).

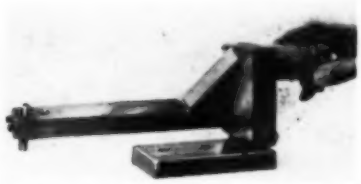


DRESSER—*Threadwell Tap & Die Co, Greenfield, Mass.* Tangi-Matic dresser can be operated either right or left handed, making it possible to dress wheels with either cw or ccw rotation. Once diamond is zeroed, all radius settings are made on direct-reading micrometer-type adjustment, and all angular settings on direct-reading dial and vernier. Dresser can be used as grinding fixture (Aug 12, p162).

WHEEL DRESSERS—*Machine Products Corp, 125 Hollier St, Dayton 3, Ohio.* Huntington-type dressers, featuring new handle design and quick-change cutter assembly, are available in three sizes: No. O, for wheels up to 10-in. dia; No. 1, for wheels from 10 to 16-in. dia; and No. 2, for wheels 15-in. dia and over (May 6, p182).

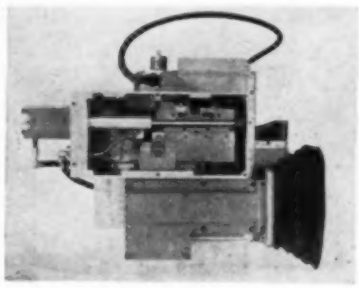


ANGLE DRESSER—*Rothfuss Tool Co, Box 2804, Providence 7, RI.* Model G-2 combination angle-dresser and toolholder has vernier scale from 0 to 180° with accuracy guaranteed within 2 min of arc. Small jobs to be milled, drilled, or tapped at any angle can be set up quickly. Tool is priced at $87.50, including cutting diamond (Apr 8, p201).

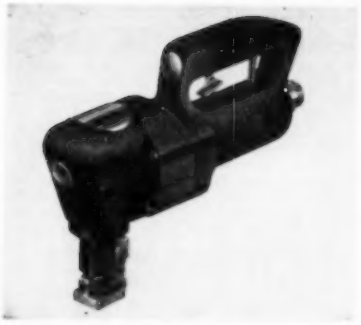


RADIUS DRESSER—*Somerset Tool Co, Virginia St, Hillside, NJ.* Dresser tradenamed Giant shapes and dresses large-diameter grinding wheels—concave, convex, or combinations of both. Unit will dress 20-in.-dia wheel up to 2-in. thickness. Stop pins allow adjustment from 90° through 180° (Mar 11, p182).

CUTTERS—*Machine Products Corp, 125 Hollier St, Dayton 3, Ohio.* Milled cutters are available in No. 0, 1¼-in. dia; No. 1, 1½-in. dia; and No. 2, 2⅜-in. dia for use with newly designed Johnston-Huntington dresser. Cutters are extra high carbon alloy steel units with heavy, wide teeth (Dec 2, p168).

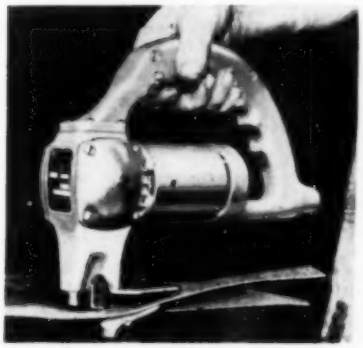


CONTOUR WHEEL DRESSER — *Hogland Eng'g & Mfg Co, Inc, 343 Snyder Ave, Berkeley Heights, NJ.* Model 89 hydraulic contour wheel dresser offers automatic operation with dressing accuracies to within a tenth. Designed for use with cylindrical grinders, dresser is available with templets for profile widths up to 6 in. and depths to 3½ in. (Dec 16, p164).



PORTABLE NIBBLER — *Fenway Machine Co, Edgemont & Clementine Sts, Philadelphia 34, Penna.* Pneumatic metal-cutting tool weighs 13 lb, measures 13 in. in length, and cuts up to 55 ipm in 10-gage stainless steel. Tool operates on air motor, 30 cfm, 90 psi, 5-hp 2-stage compressor (Mar 25, p196).

PORTABLE NIBBLER — *Buckeye Tools Corp, 5023 Springboro Pike, Dayton 39, Ohio.* Nibbler cuts ⅛-in. mild steel and ¼-in. thicknesses of softer materials. This air-powered tool cuts at a speed of 5 to 6 fpm. Right or lefthand rams are available for special work on curved or corrugated surfaces. Punch is replaceable, die can be resharpened (Dec 30, p127).



SHEAR—*Black & Decker Mfg Co, Towson 4, Md.* No. 16 cuts all types of sheet metal and wire netting, cutting through cold rolled steel at speeds up to 30 fpm. Deflector plate prevents curling, and eliminates other possible fouling of material. Tool weighs 6¾ lb (May 20, p198).

PORTABLE ELECTRIC DRILL — *Black & Decker Mfg Co, Towson 4, Md.* Heavy Duty ½-in. drill is one of three new models which feature up to 130% more power, 3-position reversing mechanism drives, positive key-drive chuck. Other models are the ⅝-in. Heavy-Duty, and the ¾-in. Standard drill. Weights range from 15¾ to 17¼ lb (Jun 17, p186).

NIBBLER—*Black & Decker Mfg Co, Towson 4, Md.* No. 16, built for continuous production work in all types of sheet metal, punches out small rectangular pieces. Operating on punch and die principle, tool delivers approx 3300 spm. Cutting die is made of nitrided HSS. Tool weighs 5½ lb (Jun 3, p164).

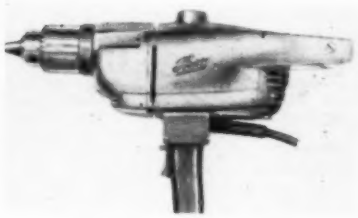
DRILLPRESS—*Portomag, Inc, 1511 E Nine Mile Rd, Ferndale 20, Mich.* Portomag drillpress has automatic power feed, making it possible for operator to run drill point down to center mark, turn on automatic feed, and let drill do work. Electromagnet in base clamps unit to work. Unit is reported to drill up to 1¼-in. and tap 1-in. holes accurately (Mar 25, p206).

DRILL EXTENSION—*Beaver Tool Co, Box 256, Huntington Station, LI, NY.* Series 600 converts flexible drill extension to rigid one without shutting off power. Device adds 10 or more in. to standard length drills, and can accommodate 52 regular drill sizes with corresponding chucks available in sizes from No. 52 to 10, and from 1/16 to 3/16 in. by 64ths (Feb 11, p161).

AIR DRILL—*Superior Pneumatic & Mfg. Inc, 4758 Warner Rd, Cleveland 25, Ohio.* Model S-P 1000 has ¼-in. capacity, safety chuck shield, produces 2500 rpm and ¼ hp at 90 psi pressure. Metering trigger gives positive rpm control from 0 to 2500. Tool weighs 2 lb, and is available with pistol grip or straight handle (Apr 22, p186).

HEAVY-DUTY DRILL — *Air Speed Tool Co, 1502 W Slauson Ave, Los Angeles 47, Calif.* Model H develops 22 ft-lb torque at speed of 1000 rpm, is equipped with ½-in. Jacobs chuck, and weighs only 9 lb. Gear case can be removed without disturbing motor; motor bearings are preloaded. Over-all size is 5½ x 14 in. (Jul 1, p148).

RADIAL DRILLPRESS—*Lance Iron Works, Box 310R3, Chicago Heights, Ill.* Portable radial drillpress eliminates necessity for handling large pieces, unwieldy tools, and turning pieces for further operations. Unit swings 360° and clamps on any size, shape, or type of metal workpiece. It is designed for use with heavy-duty portable drills, either electric or air-operated, and operates in any position (May 20, p206).



ELECTRIC DRILLS—*Thor Power Tool Co, Aurora, Ill.* Model EN-5, with ⅝-in. drilling capacity, and Model EN-6, with ¾-in. capacity, come equipped with 3-jaw chuck and key. Two larger models, EN-7 (⅞-in.) and EN-8 (1-in.) have Morse taper sockets. Speeds range from 430 rpm for smallest model to 300 rpm for the 1-in. drill (Feb 11, p172).

DRILL—*Skil Corp. 5033 Elston Ave, Chicago 30, Ill.* Portable electric drill, Model 134, has 2.5 amp motor, ball-bearing spindle, and large, easily removed inspection plate. Drill has capacity of ½ in. in wood and ¼ in. in steel, speed of 1800 rpm, and weighs 3¼ lb. Price is $34.50 (Feb 11, p162).

DRILL—*Portable Electric Tools, Inc, 320 W 83 St, Chicago 20, Ill.* Portable electric drill, ½-in. extra-heavy-duty model, features adjustable (or removable) 4-position rear handle. Unit is rated for 5 amps, and comes with gear-type chuck and key, 10-ft, cord, plug, and adapter. Price is $54.95 (Sep 9, p204).

DRILL POSITIONER—*Buck Mfg Co, 1355 N 10th St, San Jose, Calif.* Mechanical device designed into Bux portable magnetic drillpress unit provides freedom to rotate drill point 330° for accurate positioning after magnetic base has been turned on and is gripping drill unit to work. Device is available on all models (Sep 23, p204).

AIR DRILL—*Thor Power Tool Co, Prudential Plaza, Chicago 1, Ill.* ¼-in. drill is available in speeds of 2500 and 4000 rpm. This Series 1P tool weighs 30 oz and is 6½ in. long. The 5-blade rotor construction is said to offer low air consumption. Other features include offset throttle handle, upper and lower rotor ball bearings, and wire-brushed aluminum finish (Dec 30, p126).

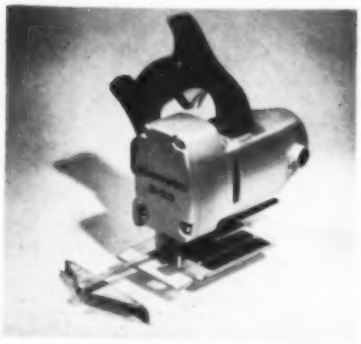
FLEXIBLE SHAFT MACHINES — *L & R Mfg Co, 577 Elm St, Arlington, NJ.* Overhead unit and bench-type unit are designed for filing, deburring, drilling, grinding, polishing, riveting and piercing. Overhead style has 1/12-hp, 115-v ac-dc, ball-bearing motor, No. O Jacobs-style chuck, speeds to 10,000 rpm. Bench-type unit uses 5-speed, 1/10-hp, 115-v ac motor, Jacobs-style chuck, has speeds from 1500 to 10,000 rpm (Feb 25, p196).

TORQUE WRENCH ADAPTERS—*P A Sturtevant Co, Addison, Ill.* Used with a torque wrench that has some form of concentrated load positioning, such as company's Sensory Torque Wrench, adapters increase the range two or three times. The 150-ft-lb wrench can be used up to 300 ft-lb; the 200-ft-lb model up to 400 ft-lb; and the 300-ft-lb model can be used for capacities of 600 or 900 ft-lb (Dec 2, p176).

ELECTRIC SCREWDRIVER-NUT-SETTER—*Thor Power Tool Co, Dept EB, Prudential Plaza, Chicago, Ill.* Silver Line EB Series has capacity of No. 10 screw or nut and features increased power, and weight and size reductions up to 25%. Tools are available with bonnet, toggle or lever switches, and in speeds of 500, 1000, 1500, and 2000 rpm (Aug 28, p160).

LOCK HAMMER—*Modern Mfg Co, Willow Grove, Penna.* Air-powered Pittsburgh lock hammer reportedly turns any sheet-metal locking edge in seconds, doing the job in one pass and without dents. Unit handles 30 to 24-gage metal and is portable. Higher-capacity models are available on request (May 20, p194).

IMPACT WRENCH—*Portable Electric Tools, Inc, 320 W 83 St, Chicago, Ill.* Wrench features "power core," a strong neoprene-steel energy accumulator. Twist of calibrated nose cap sets torque. Unit has torque range of 105 to 275 ft-lb; delivers 1600 to 1800 blows per min; and has ⅜ to ½-in.-bolt capacity (Jul 15, p188).



ELECTRIC HAND SAW—*H K Porter Co, Inc, Henry Disston Div, 300 Park Ave, New York 22, NY.* The Disston D-23 electric hand saw features "Orbite" action, cutting into material on the upstroke and backing away from it on the downstroke, greatly increasing cutting speed and assuring a cleaner cutting edge. It is the only saw of the reciprocating type with 100% ball and needle bearings. Saw will cut aluminum up to ½ in. thick, and steel up to ¼ in. thick (Nov 18, p194).

VERTICAL PNEUMATIC GRINDER —*Airetool Manufacturing Co, Springfield, Ohio.* Model 700-V with its 6-in. cup wheel, wire brush, or flexible sanding disk is used for taking down rough spots, or over-all grinding on flat or curved surfaces. The 11-lb unit operates at speeds from 4500 to 6000 rpm. Variety of large cutting surface wheels, sanding and polishing attachments are available (Dec 2, p162).

PORTABLE GRINDER — *Vee-Arc Corp, Dept VA-8, Westboro, Mass.* Portable grinder weighs 14 lb and is made for use with 9-in. disk wheels as well as 7-in. cup wheels. The ⅝-11 RH spindle has a no-load speed of 5300 rpm. Grinder is equipped with "Klixon" automatic reset overload protector. A 10-ft heavy-duty neoprene power cable is supplied as standard equipment (Oct 7, p170).

AIR IMPACT TOOL—*Burklyn Co, 3429 Glendale Blvd, Los Angeles 39, Calif.* Pencil-design Lynco 34 Automatic weighs 9 oz, is 5¾ in. long, has ⅜-in. bore, and ½-in. stroke. Tool uses less than 2 cu ft of air. It operates automatically when applied to work, shuts off when withdrawn (Jun 3, p162).

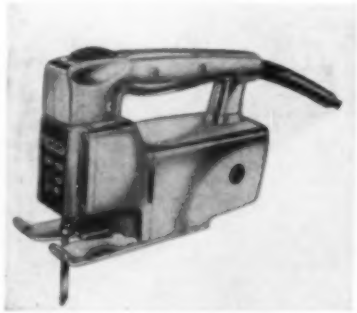
FLEXIBLE SHAFT MACHINE — *Wyzenbeek & Staff, Inc, 223 N California Ave, Chicago 12, Ill.* Machine is available in ratings from 1/3 to 1½ hp. Turning handwheel adjusts speeds within range 2000 to 7200 rpm. Shafts are extra light and flexible (Jul 15, p190).

PORTABLE ELECTRIC SCREWDRIVER—*Albertson & Co, Inc, Sioux City, Iowa.* Tool called Sioux is offered with positive or adjustable clutch. Positive clutch, provides free spindle for engaging bit with screw; operating pressure closes clutch and continues to drive until resistance is greater than hand pressure. Adjustable clutch is used where uniform tightness is desired (Jan 14, p186).

AIR TOOLS — *Gardner-Denver Co, Quincy, Ill.* New 12A-2 Series screwdrivers and 16A-2 Series nutsetters have capacities up to 5/16 in. and feature interchangeable gears, spindles, and chucks. Manufacturer states that a choice of straight-drive, positive and cushion clutches, and Safe-Torque (Scully-Jones and Co) clutch make these tools extremely versatile (Oct 21, p224).

AIR GRINDERS—*Rotor Tools Co, 26300 Lakeland Blvd, Cleveland 32, Ohio.* Small-wheel air grinders are available in three models: M1172 (left) has snap throttle, wheel arbor, and straight wheel; M1171 (center) has standard spindle, twist throttle, and ¼-in. collet; M1170 (right) has sleeve throttle, standard spindle, and ¼-in. collet. Features are: 50% more power; versatility through choice of speed, spindle, and arbor (Jun 17, p204).

STUD DRIVER—*Titan Tool Co, Fairview (Erie County), Penna.* Mustang drives studs where limited space demands a drive of small diameter. Tool can be adjusted for various lengths of grip on stud, and is available in two sizes for hand or power use: No. 1 has max capacity of ⅝ in.; No. 2 has max capacity of 9/16 in. (Aug 15, p166).



SABER SAW—*Stanley Electric Tools, Div of Stanley Works, New Britain, Conn.* Model H75 saber saw can cut through a full 2 in. of lumber and cuts wood, metal, plastic and veneers, composition board, rubber and leather. Saw retails for $54.30, including three assorted blades and a ripping guide. It is also available in a kit with eight different blades, ripping guide, and a metal case (Dec 2, p150).

ELECTRIC SAW—*RCS Tool Corp, PO Box 661, Bloomington, Ill.* Model 250 Super Saw enables operator to cut flush with any surface. It has ½-hp motor delivering 2500 spm. Unit is 16 in. long (without blade) and weighs 8 lb. Complete line of blades is available, including blades for cutting sheet metal, angles and stainless steel (Oct 7, p195).

TORQUE CONTROL—*Thor Power Tool Co, Aurora, Ill.* Uni-Tork clutch attachment fits company's air and electric screwdrivers and nutsetters. Torque adjustment is set on outside of attachment; clutch disengages instantly and completely when preset torque is reached. Adjustment ranges from 10 to 100 in.-lb torque (Mar 25, p216).

HACKSAW ATTACHMENT — *Aladdin Mfg Co, 128 Wirthman Bldg, Kansas City, Kan.* Device turns any ¼-in. electric drill into a hacksaw, jigsaw or coping saw in a matter of seconds. This ball-bearing unit is capable of cutting light metals. Up to 9/16 in. is provided for chip clearance. A specially designed cam reduces saw speed to one-half of drill speed. Attachment weighs only 11 oz (Dec 30, p140).

PNEUMATIC DIE GRINDERS — *Airetool Mfg Co, 328 S Center St, Springfield, Ohio.* Model 200 operates at speeds up to 60,000 rpm and weighs 4 oz. It is 4⅞ in. long, ⅝ in. in diameter, and has ⅛-in. collet chuck. Model 300 operates at speeds up to 38,000 rpm and weighs 12 oz. This model is 5¾ in. long, 11/16 in. in dia, and is equipped with ¼ and ⅛-in. collet chuck. Push-type throttle is located for instant and accurate speed control (Oct 21, p222).

FLEXIBLE TOOL SHAFT—*Stow Mfg Co, 29 Shear St, Binghamton, NY.* Device is designed as lightweight, portable production tool for drilling, grinding, sanding, or buffing. Model 40 tool shaft is furnished with ball-bearing motor connection and ball-bearing handpiece with removable wheel arbor having ½-20 thread. It will transmit up to ½ hp at speeds to 6900 rpm (May 20, p222).

LIGHTWEIGHT HAND GRINDERS —*Reed Roller Bit Co, Cleco Air Tool Div, 5125 Clinton Drive, Houston 20, Tex.* New 1500 Series for variety of metal grinding, sanding, and wire-brushing operations is available in a range of speeds and for several different wheel and guard mountings. Use of magnesium alloy castings makes tool lighter in weight; lever thumb-tip throttle provides easy control without changing grip (Nov 4, p186).

SUSPENSION BALANCERS — *Thor Power Tool Co, Prudential Plaza, Chicago 1, Ill.* Model 5LB6 is designed for loads up to 5 lb, and Model 10LB6 for equipment weighing from 1 to 10 lb. Devices have travel range of 6 ft and are externally adjustable for cable tension and travel. Other features include nylon-sheathed cable, rubber cable stop, and heavy-gage steel housing (Nov 18, p214).

ELECTRIC HAMMER—*Modern Mfg Co, Edgemont & Clementine Sts, Philadelphia, Penna.* Slugger is designed to simplify drilling, cutting, and chiseling. A ⅞-in. hole, 1 in. deep, can be drilled in concrete in just 30 sec. Equipped with quick-change chuck, hammer will accept any of company's 40 different tools. Tool weighs 7½ lb (Jul 15, p192).

AIR HAMMER—*E V Nielsen, Inc, 129 Broad St, Stamford, Conn.* Model AR-4 Ramex weighs 4½ lb, can deliver 5400 spm. Hammer can be used with lock seam guide, grooving tools, taper-shank drill chucks, also with other air-hammer accessories such as chisels, caulking irons, and straight-fuller, bushing, and straight-seam tools. Safety device prevents starting unless tool is touching work (May 6, p188).

NUTSETTERS—*Thor Power Tool Co, Aurora, Ill.* Right-angle nutsetters in capacities up to ½-in. bolt size are offered in six models and two types: 4RDC heavy-duty type in speeds of 350, 600, 1100, and 1300 rpm and 4RDXC model in speeds of 800 and 1350 rpm. Latter two models are for use in close quarters (Mar 25, p190).

AIR HAMMER—*Superior Pneumatic & Mfg, Inc, 4758 Warner Rd, Cleveland 25, Ohio.* Big Bully Model SP1200 for scaling, chipping, chiseling, or cutting, measures 6 in. long, consumes 6.5 cfm of air at 1500 psi, weighs 50 oz. Metering trigger permits control of power from 0 to 9000 blows per minute. Unit attains full speed and power on less than 7 cfm (Apr 8, p180).

IMPACT WRENCH—*Aro Equipment Corp, Bryan, Ohio.* Model 8100 air-powered impact wrench has an all-steel nose housing that will withstand severe handling on the toughest jobs. Specifications include length of 6 13/16 in., and weight of 6 lb. The 6000-rpm motor, ½-in.-square drive, is rated for ⅜-in. heavy-duty bolts (Dec 2, p166).

SELF-FEED AIR TOOL—*Aro Equipment Corp, Bryan, Ohio.* Midg-A-matic self-feed-air drill is 1 in. in diameter and 10 3/16 in. long. It drills holes automatically up to max size of 1/16 in. Tool operates at 20,000 rpm, has 1⅜-in. stroke, and has low air consumption. It can be used singly or in multiples (Sep 9, p120).

AIR HAMMER—*Superior Pneumatic & Mfg, Inc, 4758 Warner Rd, Cleveland 25, Ohio.* HDS-700 air hammer has beehive-type spring retainer for holding tools, instead of customary chuck. Operator can rotate cutting tool in any direction while hammer is in use. Hammer weighs 3¼ lb, measures 8 in., and has 3-in. piston stroke. Trigger controls hammer blows from 0 to 2700 per min (Sep 9, p212).

PORTABLE POWER DRIVE — *Toledo Pipe Threading Machine Co, 1445 Summit St, Toledo 4, Ohio.* No. 68 is basically a worm and ring-gear assembly housed in aluminum frame and powered by ½-hp, 110-v motor or 90-psi air motor. Adaptors can be supplied for variety of rotary power applications (Jul 15, p188).

POWER SCREWDRIVER — *Shakeproof Div, Illinois Tool Works, St Charles Rd, Elgin, Ill.* Semspak is portable automatic power screwdriver. Screws are held in automatically loaded cartridge and are automatically fed into driving jaws. Unit accommodates screws with 7/16-in. min length and 1½-in. max length. Device is 18 in. long, weighs 6½ lb, is powered by air hose (Feb 25, p196).

AIR IMPACT WRENCH—*Albertson & Co, Inc, Sioux City, Iowa.* Wrench called Sioux is said to deliver as much as 15% more torque while consuming 30% less air. With 90 psi air at wrench, Model 315 delivers 130 ft-lb in 10 sec; Model 317 delivers 185 ft-lb in 10 sec. Both weigh 5½ lb. Model 315 has a ½-in. drive, ⅝-in. bolt capacity and sells for $127.50; Model 317 has a ⅝-in. drive, 11/16-in. bolt capacity and sells for $138.50 (Dec 16, p180).

PORTABLE BROACHING MACHINE—*Pioneer Broach Co, Engineering Dept, 6434 E Telegraph Rd, Los Angeles 22, Calif.* Unit called Porto-Broach consists of a power cabinet and a hand-held, gun-type broach puller. Model PM2509 develops 5000-lb pulling capacity with a 9½-in. stroke and is designed for 3/16 through ⅝-in.-dia broaches. Model PM5009 develops 10,000-lb pulling capacity with 9½-in. stroke and will accommodate ¾ through 1½-in.-dia broaches (Nov 4, p196).

IMPACT WRENCH—*Black & Decker Mfg Co, Towson 4, Md.* No. 300 impact wrench, with a torque range of 300-450 ft-lb is built for heavy-duty construction, maintenance and repair work. Featuring a die-cast aluminum housing, lubricant-sealed ball bearings, heat-treated gears, and powered by a special ac-dc motor, the tool is ideal for large heavy nut running of ⅞ in. dia and up. It reaches max torque in 6 sec (Nov 18, p208).

AIR HAMMER—*Superior Pneumatic & Mfg Co, 4758 Warner Rd, Cleveland 25, Ohio.* Bantam Bully has metering trigger that allows operator to control speed from 0 to 13,000 blows per min. Unit is 6 in. long, weighs 20 oz, and uses 6.5 cfm air at 90 psi. Scaling, chiseling, peening, metal cutting, star drilling tools are among 24 different tools available (Jun 17, p206).

POWER TORQUE WRENCH—*Ohlsson & Rice, 3340 Emery St, Los Angeles, Calif.* Preset for given torque, wrench starts rundown of screw without impacting or ratcheting. It senses tightness, or resistance, of screw thread or other resistance and adds that value to final torque setting. Where screw is tight at first, but becomes loose just before final torqueing, wrench subtracts the value added during tight part of run-down (Mar 11, p200).

AIR POWERED TOOL—*Bellows Co, Box 631, Akron 9, Ohio.* Model GA-125 high-speed, air-powered grinder operates at 100,000 rpm at 80 psi. All the bearing load is carried by air stream, virtually eliminating tool wear. Tool is suited for grinding, deburring, cutting, polishing, die and mold finishing, engraving. Unit is equipped with filter-lubricator and 6 ft of hose (Jul 29, p134).

OFFSET SCREWDRIVERS—*Owatonna Tool Co, 383 Cedar St, Owatonna, Minn.* Tools have square bodies with bit end offset and forged at 45° angle to permit use in tight places. Vanadium-chrome tools are available in four sizes: SS-6, 4-in. long with 5/32 x 1/32-in. bit; SS-8, 4½ in. long with ⅜ x 1/16-in. bit; SS-10, 5½ in. long with 15/32 x 5/64-in. bit; and SS-12, 6½ in. long with ⅝ x 3/32-in. bit (Jun 3, p178).

HAMMER—*Lixie Products Co, PO Box 624, Providence, RI.* Dead blow hammer with replaceable nylon face and hickory handle is stated to be chip- and spark-proof. Three models are available: 2LD has 1½-in.-dia head, weighs 1¼ lb; 3LD, 1¾ head, weighs 1 lb 12 oz; 4LD, 2¼ head, weighs 3 lb (Dec 2, p168).

FORGED SAFETY TOOLS—*Ampco Metal, Inc, 1745 S 38th St, Milwaukee 46, Wis.* Tools made of aluminum-bronze alloys have been added to company's line of safety tools. Line of forged, non-magnetic, noncorrosive, and spark-resistant tools includes adjustable and box wrenches, pliers, pneumatic tools, air-hammer chisels, and air-hammer points (Jun 17, p220).

WRENCH — *Billings & Spencer Co, Hartford 1, Conn.* Construction wrench, long-tang, 15° angle, Vitalloy-forged, has heavy chrome-plated finish over copper and nickel, with range of openings from ⅞ to 2 in. (Nov 18, p222).

IMPACT WRENCH — *Swenson Engineering, PO Box 43, Branford, Conn.* Tool called Swench can deliver torque values up to 20 times that applied to handle. Model 500 fits ½-in. sockets, takes bolts through ¾ in., is 11 in. long. Model 750 fits ¾-in. sockets, takes bolt ½ in. through 1¼ in., is 16 in. long. Model 1000 is designed for 1-in. sockets, bolts up to 1¾ in. (Jun 3, p149).

SCREWDRIVER—*Bridgeport Hardware Mfg Corp, Bridgeport, Conn.* Cushion-Grip screwdriver features neoprene-rubber grip bonded to amberlite handle. Non-slip handle is unaffected by water, oil, and gasoline. Tool, said to provide 50% greater torque than ordinary screwdrivers, is available in variety of styles and in 1 sizes from 3 to 12 in. Prices range from $1 to $2.70 (Sep 23, p200).

INDUSTRIAL SCREWDRIVER — *Stanley Tools, Div of Stanley Works, New Britain, Conn.* No. 1272 Thru-Bar features a hardened and tempered tool-steel bar which extends through fluted hardwood handle and is winged to prevent turning. Tools come in eight sizes ranging from 2 to 12 in. long; prices range from 45¢ to $1.15 (Jul 29, p154).

SNIPS—*Peck, Stow & Wilcox Co, Southington, Conn.* Double-cut snip No. 55 has lower blade ground to triangular reamer point for making starter cut. Female blade is serrated to minimize back thrust. Handle is hot-dipped Plastigrip (Apr 8, p202).

MINIATURE NUTDRIVERS—*Hunter Tool, Box 564, Whittier, Calif.* Tools are available in sets with individual handles or in replaceable sets with swivel-type jeweler's handle. Sizes available (measuring across flats) are: 5/64, 3/32, 7/32, ⅛, 5/32 and 3/16 in. (Jul 15, p196).

WRENCHES—*Billings and Spencer Co, Hartford 1, Conn.* Single open-end wrenches forged of alloy steel have been added to company's line of wrenches and shop tools. Heads are offset 15°. Finish is heavy chrome plate over copper and nickel (Sep 9, p206).

TORQUE CONTROL—*Overload Control Co, 260-11 Langstron Ave, Glen Oaks, LI, NY.* Device is mounted between wrench and socket. As nut or bolt is tightened, device automatically disengages when predetermined torque is reached. Unit comes in three sizes: 1⅜-in. dia x 2 in. long, range 0-25 in.-lb; 2⅜ x 2½ in., 25-80 in.-lb; and 3 x 3 in., 80-200 in.-lb (Jun 17, p198).

SCREWDRIVER — *Kent-Moore Organization, Inc, 28635 Mound Rd, Warren, Mich.* Palm-Grip is said to deliver four times as much power as present type. Increased power results from grip that fits palm of hand. Shaft from grip slips into square socket in handle of screwdriver; small lever on grip allows left or right racheting. Full set has all types of heads. Nut drivers are also available (Jun 3, p172).

GEARED WRENCH—*National Reechet Corp, 2093 E 19th St, Cleveland 15, Ohio.* Right-angle geared wrench facilitates working around corners on jobs requiring tightening or loosening at normally hard-to-reach angles. Fits all standard extensions, sockets, and ratchets (Sep 23, p200).

HAND TORQUE SCREWDRIVER — *Swift Tools Inc, 3201 S Prairie Ave, Sioux Falls, SD.* Tool allows operator to run and torque small nuts, screws, and other threaded fasteners. Features include visual adjustments in ¼-in.-lb increments; continuously variable torque from 0 to 8 in.-lb; ¼-in. female hexagon drive to receive special bits and sockets (Oct 7, p198).

HONING LAPS—*Air Transport Equipment, Inc, Albany Ave, Amityville, NY.* Macolaepp tools are suitable for use on tool steels and the hardest carbide tools. Tools provide 95% of the hardness of diamond at 1/3 the cost. Mounted on handle, laps are available in any of four different grits (Feb. 25, p206).

TAPPING HAMMERS—*Hunter Tool Co, PO Box 564, Whittier, Calif.* Hammers are available in brass, bronze, beryllium, or copper, and are designed for toolmaker, shop, or craftsman who desires a metal non-sparking hammer. New line is available with head sizes from ½ through 5 lb (Jun 17, p202).

HAMMERS—*Podlin Tool Co, 11911 Franklin Ave, Franklin Park, Ill.* Lead hammer molds, tubular steel lead hammer handles and lead hammer alloy are now available for those who prefer to mold their own soft hammers. Three sizes are available—for 1½, 3 and 5-lb hammers (Dec 16, p194).

TORQUE-INDICATING TOOL—*Apco Mossberg Co, Lamb St, Attleboro, Mass.* MC 150 Micro-Set torque indicating tool can torque screws, bolts or nuts in either direction with high accuracy. Tool releases automatically at the desired tension and resets itself after release. It is available in three sizes: 5 to 150 in.-lb, 100 to 750 in.-lb, and 700 to 1600 in.-lb (Dec 16, p178).

RUBBER GRIPS—*Wright Tool and Forge Co, 42 E State St, Barberton, Ohio.* Wrightgrips fit ratchet wrenches and flex handles. Made of synthetic rubber that is resistant to grease, oil, and gasoline, grips are abrasion resistant and unaffected by most solvents. They provide over twice the gripping surface of regular metal grips and are available in variety of colors (Oct 7, p195).

CRIMPING TOOL—*Vaco Products Co, 317 E Ontario St, Chicago 11, Ill.* Crimcut is combination crimping tool, bolt cutter, wire cutter, insulation stripper. It enables anyone to attach solderless terminals quickly and easily, shears bolts from 4-40 to 10-24 without marring threads and strips wire from No. 10 to No. 22. Price of this 8-in.-long tool is $3.95 (Sep 9, p224).

MACHINIST'S FILE—*Nicholson File Co, Providence 1, RI.* Magicut is designed for use on both ferrous and nonferrous metals. It has coarse single-cut teeth, interrupted by long, narrow chip breakers. Tools are available in flat, half-round, and square shapes and in lengths of 8, 10, 12 and 14 in. (Nov 18, p219).

HAMMER—*Eclipse Pattern Works, 31 Elberta Rd, Painesville, Ohio.* Soft-faced hammer known as Hefty Hammer is made of an aluminum alloy and has a 13% elasticity factor. Tool, suited for positioning of heavy dies, driving gear arbors, or opening and closing jigs, is available in two types of aluminum—soft and super soft—and in eight sizes from ½ to 5 lb (Apr 8, p209).

PIPE CRIMPER—*Niagara Machine & Tool Works, 685 Northland Ave, Buffalo, NY.* Model 500, with capacity up to 20-gage galvanized steel, has 1¼-in. blades, makes two crimps each time jaws are compressed. Tool weighs approximately 1 lb, is made of abrasion-resistant steel, has plastic hand grips with stop posts to prevent slippage (Apr 8, p194).

BOLT TIGHTENER—*Tipco Mfg Co, 14758 Calvert, Van Nuys, Calif.* Tip Wrench eliminates finger fumbling and makes it easy to get into hard-to-reach places to tighten or loosen nuts, bolts, and slotted machine screws. Thumb pressure on plunger head causes jaws to open and slide out to desired size. Capacity ranges from No. 2 to No. 12 nuts and bolts. Tool is completely shockproof (Oct 21, p226).

PLIERS—*Owatonna Tool Co, 383 N Cedar St, Owatonna, Minn.* Rib-joint pliers use tongue-and-groove locking mechanism to remove tension from pin. Tools are available in three sizes: 5 in. long, 3 jaw adjustments; 10 in. long standard, 6 adjustments; and 10 in. long heavy-duty, 6 adjustments (Jun 17, p188).

LEAD HAMMERS—*Podlin Tool Co, 1191 Franklin Ave, Franklin Park, Ill.* Lead hammers with wood handles have been added to company's line of shop tools, and are available in 1½, 2, and lb sizes (Jul 1, p142).

DRIVE HANDLE—*Hunter Tools, Box 564, Whittier, Calif.* Spin-Master is screwdriver-type tool that has button on top of handle which, floating independently of handle, allows user to spin nuts or bolts in or out. Crossbar acts as flywheel to power the tool and also acts as leverage point to either tighten or loosen nuts or bolts (Aug 26, p166).

FREE-WHEELING ATTACHMENT —*Proto Tool Co, 2209 S Santa Fe Ave, Los Angeles, Calif.* Rotahead No. 5448 replaces reversible ratchets by making any ½-in. handle, attachment, extension, or torquer instantly reversible. To change direction, head is pressed down; when released, 30 teeth engage for heavy torquing capacity. Head is 1 1/16 in. in dia. (Aug 12, p184).

BOX WRENCHES — *Owatonna Tool Co, 383 Cedar St, Owatonna, Minn.* Heavy-duty box wrenches are made from high-alloy steel and range in size from ⅜-in. opening to 3½ in. All are available in straight-handle series and with handle extensions — most are available in 15° offset or double-offset series (Jul 15, p190).

BABBITT HAMMER—*ENS Products, Inc, 721 Beacon St, Loves Park, Ill.* Hammer has 22-oz head that incorporates a threaded steel insert for attachment to the tubular steel handle. Unit is priced at $2.40; replacement heads, $1.20 (Sep 9, p200).

HACKSAW BLADES—*Heller Tool Co, Newcomerstown, Ohio.* Hand and power-hacksaw blades in all standard specifications, both regular and HSS, have been added to Heller Tool products. Also available in new "Job-Tempered" line are hard-edge metal cutting bandsaws, and some 1300 stock sizes of oil-hardening and air-hardening flat ground die steel (Apr 8, p210).

HAMMERS — *Custanite Corp, 1228 Utica Ave, Brooklyn 3, NY.* Teniplex inertial impact hammers have all-metal body and plastic face. Available as No. 2150, 2-lb, 1½-in. faced tip; and No. 2175, 2¼-lb, 1¾-in. face (Jun 3, p169).

MARKING MACHINE—*Markem Machine Co, Keene 82, NH.* Offset marking machine, Markem Model PAM-AG, is designed for short-run marking of cylindrical objects. It uses a master plate and removable type inserts. Bench-mounted model employs interchangeable workholding fixtures to handle various cylindrical, tapered, conical, or wire lead objects, ⅛ to 2½ in. dia, that cannot be chute fed. Max imprint area is 3 x 2¾ in. (Dec 16, p178).

PERCUSSION PRESS — *Geo T Schmidt, Inc, 4100 Ravenswood Ave, Dept AM, Chicago 13, Ill.* Bench-style press for marking metal components at production machines has capacity of six 1/16 in. characters. Unit can be furnished with any type of base for mounting (Aug 26, p162).

MARKING MACHINES—*Markem Machine Co, Keene 70, NH.* Large area imprinting of variable detail trademarks, designs, or other data can be done at rates from 30-60 per min. Model 103A, for flat object marking, has large-diameter ink rolls and roll reservoir. Model 103AE will imprint recessed areas below top surface of piece. Max imprint size for both machines is 9 in. front to back by 11 in. left to right (Dec 16, p184).

NUMBERING DEVICE—*Electromark Corp, 2093 E 19th St, Cleveland 15, Ohio.* Adjustable unit for marking serial numbers on metals is hand operated, uses electro-chemical etching process, and features company's power unit as power source. Numerals and letters may be ¼-in. square or smaller (Mar 25, p228).

PORTABLE MARKING UNIT—*Geo T Schmidt, Inc, 4100 Ravenswood Ave, Chicago 13, Ill.* Marking Cruiser contains everything necessary for hand stamping. It provides not only the tools, but also the working area. The unit includes a retractable stool, two hammers, absorber pad, adjustable lamp, and a working anvil. Over-all dimensions are 24 x 36 x 32 in. high. Price is $650 (Dec 16, p186).

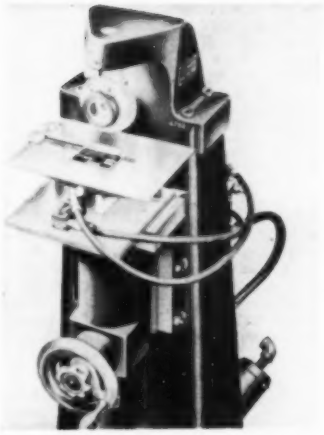
BENCH MARKER—*Geo T Schmidt, Inc, 4100 Ravenswood Ave, Chicago 13, Ill.* Pneumark Model 10-T is designed to stamp lettering or numbers into steel parts. Press is operated by solenoid-controlled valve, which opens only when both hand-control buttons are pressed at once. Base is drilled and tapped for fastening fixtures or nests. Lettering tools use 1-in.-round shank (Apr 8, p199).

AUTOMATIC ROLL MARKER—*New Methods Steel Stamps, Inc, 149 Jos Campau St, Detroit 7, Mich.* Series 900 marker marks end surfaces of production parts during machining cycle on screw machines and other multiple-station machines. Unit attaches to tool mount slides, and can mark flat or angular end surfaces. Standard marking die diameters range from 0.800 to 4½ in. (Sep 9, p120).

IMPACT DEVICE—*Air Impac Co, 920 Walnut, Flint 1, Mich.* Impact-Tool mounts at any angle on drillpresses, special machines or arbor presses, operates on line pressure as low as 20 psi and is designed for identification marking, light piercing, staking and riveting. Device can be actuated by solenoid or poppet valve (Mar 11, p184).

PANTOGRAPH CHART—*H P Preis Engraving Machine Co, 204 Industrial Branch, Hillside, NJ.* Chart gives correct pantograph ratio and proper width of cutter when engraving letters with specified height from single line master. It is made of plastic and sells for $1 (Feb 25, p204).

STAMPING PRESS—*Acromark Co, 7-13 Morrell St, Elizabeth, NJ.* Acro-leaf Model 250-H hot stamping press, which will stamp up to 1000 pieces per hr with manual feed, or a possible 300% more with automatic feed, has a die area of 6 x 6 in., taking roll leaf up to 6 in. wide. Press is capable of stamping most thermosetting materials as well as plastics, fiber, wood, and coated metals (Apr 8, p190).



STAMPING MACHINE — *Geo T Schmidt, Inc, 4100 N Ravenswood Ave, Chicago 13, Ill.* Stamping machine marks details into nameplates or other metal parts. Floor model machine uses shop air line pressure (20 to 40 psi) and can be used for marking nameplates from 1/32 in. thick to die components or other parts up to 4 in. thick (Sep 9, p202).

MARKING DEVICE—*Pannier Corp, 104 Sandusky St, Pittsburgh 12, Penna.* Rotary hot metal marker has two pockets, located 180° apart, which hold company's quick-change type cartridges. Location of pockets allows an impression to be made every 18 in.; if only one pocket is set with type a mark is made every 36 in. Operation is timed with material passing by; either air or hydraulic cylinder powers ram (Jun 17, p200).

ENGRAVING MACHINE — *New Hermes Engraving Machine Corp, 13-19 University Place, New York 3, NY.* Engravograph Model I-R is designed for engraving over-size panels which cannot be accommodated by conventional units. Pantograph assembly, motor, and copy table are built as an independent unit on one chassis, permitting panels up to 25 in. wide by any length to be engraved (Aug 26 p162).

STAMPING MACHINE — *Machine Tool Div, Cadillac Stamp Co, 17315 Ryan Rd, Detroit 12, Mich.* Auto transmissions are stamped with serial numbers on completely automated machine which receives transmissions over conveyor and delivers parts to position against spring cushioned stop. On contact, microswitch starts automatic marking. Ejector pushes cases onto conveyor. Entire operation takes 6 sec (Apr 22, p190).

MARKING MACHINE — *Noble & Westbrook Manufacturing Co, East Hartford, Conn.* Model 486 performs two marking operations on aircraft engine valve tappet guides. Pieces are roll marked with a two-line identification on smaller OD surface and stamped with a timing mark on upper flat surface. Mandrels support work during marking and permit free rotation as work travels across face of marking die (Dec 2, p162).

MARKING PRESS—*Geo T Schmidt, Inc, 4100 Ravenswood Ave, Dept AM, Chicago 13, Ill.* Equipped with 8-station dial feed, S-4K press stamps up to twelve ¼-in. characters into steel parts. Feeding is done at front of dial, away from ram. Discharge is automatic. Press is tripped by hand lever. Stroke is ¾ in.; die space, 6 in.; throat, 4 in.; speed, 60 rpm with back gear; ram bore, 1 in. (Apr 8, p178).

VIBRATORY MARKING MACHINE—*Defiance Machine & Tool Co, 1920 S Vandeventer Ave, St Louis 10, Mo.* High-cycle, short-stroke, vibratory marking machine, known as Vibro-Mark, was developed to mark part numbers on bucket and compressor vanes for jet engines. Light, vibratory strokes reduce possibility of internal stresses in material itself. Unit can be hand fed or equipped with automatic feed and timing devices (Sep 23, p202).

INSERT ROLL DIE—*M E Cunningham Co, 1062 Chateau St, (North Ave), Pittsburgh 33, Penna.* Die for turret lathes, engine lathes, and screw machines is designated Mecco Safety and features improved spring return that returns unit to starting position after part has been marked. Unit can be made for one or more lines of lettering of any number of characters (Oct 7, p178).

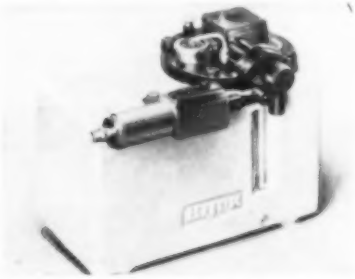
DIE STAMP—*Sossner Steel Stamps, 161 Grand St, New York 13, NY.* Time Saver has specially hardened steel plate under the changeable type. Insert plate is made of company's Miracl steel, developed for stamp and die purposes. Available in 3 sizes, stamp can be used in hand or in press (Jul 1, p158).

GEAR MARKING MACHINE—*Geo T Schmidt, Inc, 4100 Ravenswood Ave, Dept AM, Chicago 13, Ill.* Model 175-S marks on periphery of ring gear blanks. After marking, gear is engaged by hydraulic arm that carries it to discharge chute. Entire operation is automatic. Serial numbering, fixed lettering, or both can be incorporated in marking tool (Jan 14, p164).

HEAVY DUTY PANTOGRAPH—*Mico Instrument Co, 80 Trowbridge St, Cambridge 38, Mass.* No. 624 is recommended when performing routing and milling operations in steel. Ratios of 1.5-to-1 to 4-to-1 permit engraving six sizes of characters from single master. Full line of accessories is available (Mar 11, p192).

MARKING MACHINE — *Noble & Westbrook Mfg Co, East Hartford, Conn.* High-speed automatic Dual-Dial machine is designed for marking thin-wall cup-shaped parts or tubes. Work-feed dial rotates in ccw direction carrying work pieces to a reciprocating feed finger, which transfers each part onto work mandrel on the 12-station work dial (Oct 7, p172).

PNEUMATIC MARKER — *Pannier Corp, 104 Sandusky St, Pittsburgh 12 Penna.* Portable single-impact pneumatic marker, designed for hot or cold metal marking, weighs only 12 lb, and is easily carried about on end of air hose. It operates on air pressure as low as 50 psi. Interchangeable type holders take six 3/16-in. characters, four ¼-in. characters, or individual characters up to ½ in. (Sep 23, p198).



HYDRAULIC LUBRICATOR—*Bijur Lubricating Corp, Rochelle Park, NJ.* Hydraulic lubricator designated Cyclic Y, for applications where desired lubricant discharge per machine cycle is relatively small, operates on any hydraulic line pressure from 500 to 3000 psi and delivers 2 cc of oil per lubricating cycle. Seven different lubrication cycles can be obtained (Sep 9, p206).

PUMP OILER—*Eagle Mfg Co, 2523 Charles St, Wellsburg, W Va.* No. 58 Eaglet is made of copper-coated steel and holds 4 oz of oil. It is equipped with a rigid 3-in. spout. Price 98c (Sep 9, p209).

OILER—*Oil-Rite Corp, 2386 Waldo Blvd, Manitowoc, Wis.* Device eliminates any variation in drop feeding since oil which feeds the sight feed valve is always at the same level, maintained in base of reservoir. Solenoid valve wired across the line of driving motor, starting and stopping with the motor, provides automatic operation (Sept 9, p196).

LUBRICATOR—*Automation for Industry, Port Crane, NY.* Strip-feed lubricator, for punchpress operations, wipes surface of stock free from foreign materials and places thin film of lubricant on either or both sides of stock. Action is accomplished by upper and lower oil reservoir, with two floating felt wipers (Feb 11, p189).

OILERS—*Trico Fuse Mfg Co, 2948 N 5th St, Milwaukee 12, Wis.* Kwik-Flush oiler floods bearing with fixed amount (approx 18 oz) of lubricant the instant oiler valve is opened. Following flushing cycle, lubricant is fed drop by drop at any required rate. Units are available in 10 oz, 1 pt, 1 qt, and 2½-qt capacities, with manual or electric solenoid shutoff valves (Mar 25, p212).

SELF-CLEANING FILTER—*Bowser, Inc, Lubrication and Filtration Div, 1300 E Creighton Ave, Fort Wayne, Ind.* Dual-purpose, fully automatic filter has interchangeable filter elements for handling lubricants or coolants. Timer provides completely automatic self-cleaning cycles ranging from 20 sec to 30 min. A wide range of sizes is available with flow rates ranging from 120 to 1200 gpm (Aug 12, p180).

OIL MIXER—*Force-Flo, Inc, PO Box 2442, East Cleveland 12, Ohio.* Unit has non-corrosive brass mixing head that has intake for water, intake for oil, mixing chamber, and dispensing outlet from which a uniform emulsion is automatically expelled (Mar 25, p227).

OILER—*Dill Mfg Co, 700 E 82 St, Cleveland, Ohio.* Pin-point oiler designed like fountain pen delivers oil in quantities as small as fraction of drop. Unit operates in holes up to ⅞ in. deep. Spring-controlled steel point is pressed against spot to be oiled, then released; fraction of drop is ejected. Oil supply is always visible (Sep 23, p210).

AIR-MOTOR LUBRICANT PUMP—*Lincoln Engineering Co, 5703-27 Natural Bridge Ave, St Louis 20, Mo.* Pump can be clamped in 30 sec to any standard 25-to 50-lb refinery container. Maker reports pump will develop grease pressure 50 times greater than air-line pressure (Mar 11, p204).

DUPLEX LUBRICATOR—*Bijur Lubricating Corp, 151 W Passaic St, Rochelle Park, NJ.* Duplex unit, AP-3, consists of two gear pumps with common drive gear, mounted in single housing, both drawing oil from common reservoir. It is designed for machines in which some bearings need periodic oiling and others need continuous oiling. Meter-Unit filters and measures oil fed to bearings (Feb 11, p192).

LITHIUM-BASE GREASE—*Gulf Oil Corp, 1822 Gulf Bldg, Pittsburgh 30, Penna.* Gulfcrown is multi-purpose product designed to provide superior lubrication under such conditions as high or low temperature, action of water, high-speed bearing action, and long storage (Apr 22, p214).

FIRE - RESISTANT HYDROLUBE FLUIDS—*Carbide & Carbon Chemicals Co, Div of Union Carbide Corp, 30 E 42nd St, New York 17, NY.* Ucon 150-CP and 275-CP are used where petroleum oils present fire hazard; with these water-base fluids, hazard is minimized as long as recommended water content is maintained (Jan 14, p186).

GEAR PUMP—*Bijur Lubricating Corp, 151 W Passaic St, Rochelle Park, NJ.* Sealed gear pump is intended for recirculation sump systems. Two built in safety valves permit pump to be driven in either direction. Discharge is 50 cc per min at 100 rpm; recommended speed range is 20 to 1000 rpm. Pump is capable of pumping at discharge pressure of 150 psi with approx 80% efficiency (Sep 9, p192).

STRAINER DEVICE — *Rosaen Co, 1776 East Nine Mile Rd, Hazel Park, Mich.* Telltale Strainer device notifies user when strainer is dirt-clogged, acts as a bypass valve, provides for easy strainer removal, and hikes usable oil supply. Unit flashes red signal when strainer is clogged (May 20, p226).

LUBE SYSTEM—*Lincoln Engineering Co, 5703-27 Natural Bridge Ave, St Louis 20, Mo.* Centralized lubrication system consists of one or more manifold blocks, threaded for insertion of standard grease fittings. Blocks are bolted to machine. Rigid or flexible lines connect bearings to inlet ports of manifolds. System permits lubrication without machine shutdown (Feb 11, p188).

COOLING AND LUBRICATING SYSTEM—*Precise Products Corp, Racine, Wis.* Vapor Lub system is designed for use with high-speed spindles using grinding wheels or carbide cutters, but is also effective on milling machines, drillpresses, or tapping operations. Unit creates blast of vapor that is many degrees cooler than ambient temperature, permitting effective cooling and lubrication of work and tool (Jul 29, p152).

HIGH-TEMPERATURE LUBRICANT—*Tower Oil Co, 300 W Washington St, Chicago 6, Ill.* Lubricant called MP-Hi-Temperature does not thin out up to approximately 600 F, at which point it is transformed from fluid to gas; at —60 F it remains fluid. Product is effective for heavy pressures and loads (Jan 14, p192).

GEAR LUBRICANT—*Warren Refining & Chemical Co, Cleveland, Ohio.* Plastigear-X will not melt or freeze, and is not susceptible to water or extreme pressure. Company claims only one-quarter as much grease is needed as before. It can be applied by hand or gun, and is recommended for open gears, chain, wire rope, and cable (Jul 1, p163).

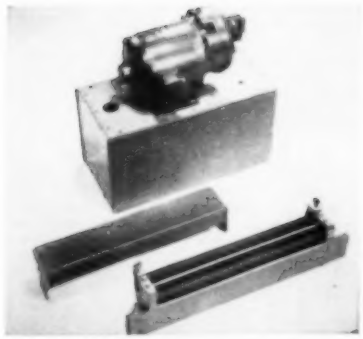
ANTI-FRICTION COMPOUND — *Lubikold Co, 516 Bergen St, Brooklyn 17, NY.* All-purpose Lubikold, mixed with cutting oils or emulsions reportedly adds 30 to 50% to life of tools or dies, permits faster, deeper cutting without excessive heat. White powder compound will not gum, harden, cake, or break down under heat (Apr 22, p214).

LUBRICANT—*Fluidwick Co, 5319 E Outer Drive, Detroit 34, Mich.* Permawick, a self-wicking, liquid lubricant that fills any sleeve bearing cavity, is combination of oil and cellulose base fibers. Injection machine meters injection within ½% (Feb. 11, p194).

LUBRICANT—*Pacific Lubricant Co, 5807 East Beverly Blvd, Los Angeles 22, Calif.* Gear-Moly reportedly reduces bearing wear and failure and lengthens gear tooth life. Material contains molybdenum disulfide particles suspended in SAE 90 gear oil. Recommended usage is about 2 oz per lb of oil or grease. Price for 8-oz can is $1.98 (May 20, p232).

DRY FILM LUBRICANT — *Alpha Molykote Corp, 65 Harvard Ave, Stamford, Conn.* Molykote 174 X, developed for drawing and forming of titanium, titanium alloys, chromium and stainless steels at elevated temperatures, consists of extremely fine particle size graphite combined with high temperature binder and dispersed in aromatic solvent system (Apr 8, p188).

LUBRICANT—*Alpha Molykote Corp, 65 Harvard Ave, Stamford, Conn.* Molykote GX is refinement of Molykote G and has an increased total surface area of molybdenum disulfide. By decreasing particle size more MoS_2 is brought into contact with metal, while reduction in solid content minimizes excessive surface accumulation (May 20, p216).



STOCK LUBRICATOR — *Brandes Press Co, 6408 Euclid Ave, Cleveland, Ohio.* Unit provides continuous, even amount of lubricant to coil stock before it enters press, guarding against excessive die wear and shearing of punches. Device consists of geared pump motor, filter or baffle tank, and stock lubricator head. Lubricant is sprayed on top surface and wiped on bottom (Jun 17, p214).

CORROSION-RESISTANT GREASES —*Keystone Lubricating Co, 3100 N 21st St, Philadelphia 32, Penna.* Keystone 5P line provides protection against corrosive agents and solvents. Line consists of 3 types covering operating temperatures from 0 to 350 F; ASTM penetration range of 200 to 350 (Jan 14, p186).

LUBRICANT—*Keystone Lubricating Co, 3100 N 21st St, Philadelphia, Penna.* Keystone No. 49 Light reportedly resists oxidation, sludging and breakdown, and is recommended for high temperature use in air compressors, ring bearings in electric motors, multiplate friction clutches, and plastic molding heat-transfer systems (Mar 25, p196).

OIL COOLER—*Heat-X, Brewster, NY.* Oil cooler for Pratt & Whitney vertical hole grinder consists of two cast-aluminum water coolers. Oil is circulated through coolers to maintain room temperature conditions throughout hydraulic system. Temperature difference between hydraulic oil and grinder is ±1 F. Cooling unit is in separate cabinet at rear of machine (May 20, p220).

LUBRICATING PUMPS—*Sundstrand Machine Tool Co, Hydraulic Div, 2210 Harrison Ave, Rockford, Ill.* Model OB line is designed to handle lubricating, hydraulic, and light fuel oils at pressures to 300 psi and speeds to 1800 rpm. Pumping capacity is 24, 30, or 39 gal per hr with either right or left rotation. Two inlet and two outlet ports permit connection on either side of body (May 20, p220).

ENGRAVING COOLANT — *New Hermes Engraving Machine Corp, 13-19 University Place, New York 13, NY.* Engravolube, supplied in squeeze bottle, is specially formulated for cutting on hard materials such as stainless, nickel-chrome, bronze, brass, monel, and cast iron. Material is also recommended for drilling, tapping, milling and broaching (Jul 1, p162).

FILTER UNIT—*Henry Mfg Co, Inc, Bowling Green, Ohio.* Industrial liquid filtering system is an automatic, continuous, and self-cleaning unit incorporating all three principles of liquid clarification—flotation, progressive filtering, and settling. Standard models are available in capacities from 20 to 1000 gpm and with filter screen sizes from 0.004 in. (Sep 23, p202).

LUBRICATOR—*Wm W Nugent & Co, Inc, 3440 Cleveland Ave, Skokie, Ill.* Pressure flow lubricator delivers oil or other liquids under pressure, in measured quantities, to high or otherwise inaccessible places. Device is offered as single unit or in multiples of 15, depending on number of feeds required (May 20, p214).

MOLYBDENUM DISULFIDE — *Vanguard Solid Lubricants, Inc, 57 E 73rd St, New York 21, NY.* Molyglyde 256-V incorporates moly in volatile base. Applied in same manner as light viscosity lubricant, compound volatizes, leaving moly to function as dry lubricant. Molyglyde 156-P is multi-duty lubricant for use below 300F (Mar 25, p196).

PRODUCTION SPRAYER—*Tower Oil Co, 300 W Washington St, Chicago 3, Ill.* Production sprayer for applying Micro-Moly molybdenum disulphide lubricant is a self-pressurized, 5-gal unit complete with spray gun and 9 ft of hose. Trigger action is adjustable to govern rate of discharge and spray pattern. Container, gun and hose are returnable for credit (Oct 7, p174).

OILERS—*Trico Fuse Mfg Co, 2948 North 5th St, Milwaukee 12, Wis.* Multiple-feed oilers feature more accurate feed control through use of tapered feed-adjustment screws. Oilers are available with manual or electric solenoid control, with from 1 to 24 outlets, in 10-oz, 1-pt, 1-qt, and 2½-qt capacities, and with Pyrex or Lucite reservoirs (Jun 3, p178).

LUBRICANT — *Flamemaster Chemicals, Inc, 3813 Hoke Ave, Culver City, Calif.* Dri-Film Perma-Glide is available in 6-oz aerosol-spray container. Said to effective at —100 and +750 F, product is priced at 98¢ per can (May 20, p212).

LUBRICATING OIL—*Lehigh Chemical Co, Industrial Div, Chestertown, Md.* High-temperature oil, Anderol L-825, designed for use on conveyor belt operations has operating range up to 500 F continuously and over 600 F for short periods. Product gives twice the film strength and load carrying properties and has only 23% of the volatility of wide temperature range lubricants previously available (Dec 2, p176).

CONVEYOR LUBRICATORS — *J N Fauver Co, 51 W Hancock Ave, Detroit 1, Mich.* Series 700 has air control panel, filter, regulator, and lubricator (Crown line by Hannifin); universal pick-up; and elimination of drippage by use of automatic shut-off nozzle. Model 702 lubricates one side of conveyor; 704 lubricates both sides of mono-rail conveyor (Feb 11, p176).

COOLANT—*Folden Chemical Ltd, 9015 Wilshire Blvd, Los Angeles, Calif.* Royal Flush 306F is said to step up tool life in cutting of metals, especially on harder alloys such as 19-9 DL and 17-7 PHS stainless. Waterborne catalyst is attracted to tool by static charge produced by tool as it parts metal or substance being machined. Catalyst stops pick-up on tool, keeping it cool (May 20, p212).

CUTTING FLUIDS—*Beloit Tool Corp, Regal Div, PO Box 30, Beloit, Wis.* Jet-Cut 9 and Flo-Cut 15 are recommended for tapping, drilling, milling, hobbing, and threading operations on materials such as stainless, boron, titanium steels, and other hard-to-machine steels. Jet-Cut 9 can be applied by brush or squirt oiler; Flo-Cut 15 is formulated for use in circulating, drip, wick, and vapor or mist systems (Jun 17, p215).

COOLING COMPOUND—*International Chemical Co, Dept 350, 2628 N Mascher St, Philadelphia 33, Penna.* Compound 1231-A, for cutting and grinding aluminum, will not stain or discolor, and is said to have excellent lubricating properties which protect both work and machine (Apr 8, p204).

SYNTHETIC COOLANT — *Daubert Chemical Co, 333 N Michigan, Chicago, Ill.* Cool-Speed is used with water vehicle to produce transparent solution which has excellent lubricity and cooling properties, and produces better finishes on cast iron, brass, aluminum, as well as various steels, including stainless (May 20, p226).

OIL BASE ADDITIVES — *Cincinnati Milling Machine Co, Cincinnati 9, Ohio.* Cimcut AA (general purpose) and NC (non-corrosive, for nonferrous metals), are added to mineral oils to form cutting oils. Materials are mixed with mineral oils in proportions varying from 1 to 20% and can be obtained concentrated or pre-blended (Jul 29, p144).

COOLANT — *International Chemical Co, Dept 275, 2628 M Mascher St, Philadelphia 33, Penna.* Tooleze 1234 is said to provide max cooling efficiency and permit fast, heavy cuts. Water-soluble compound prevents welding of chips to cutting tool, also acts as effective rust preventive (Mar 25, p228).

SQUEEZE-BOTTLE OILER — *Butler Stamping Co, Dept 72, Butler, Penna.* Squee-Zit squirts one drop or full stream of oil. It is available in 4 and 8-oz sizes, packed a dozen to the carton (Nov 18, p212).

CUTTING OILS—*Tower Oil Co, 300 W Washington St, Chicago 6, Ill.* Towercut F Series has been developed for difficult broaching, gear hobbing, and tapping jobs, where problems of high pressure, heat, and friction exist (Jan 14, p182).

MIST COOLANT SYSTEM — *Wesco Tool & Mfg Co, 2820 San Fernando Blvd, Burbank, Calif.* Coolant system designated Tool Mist is recommended for use on all types of machine tools. Coolant can be applied in combination with air in such a way that coolant actually dissipates in the air. Unit is available with a 1-gal container and 1 or 2 outlets. A 3½-gal model is available with up to 4 outlets. The 1-gal model sells for $28.85 (Nov 4, p198).

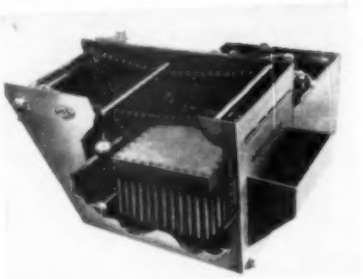
COOLANT PUMP—*Sutton Mfg Corp, Norfolk, Va.* Model CTU-115 coolant pump has all-bronze pump housing, impeller, and shafts. Unit will pump coolants, cutting oils, soluble compounds, and other liquids to machine tools. Unit comes equipped with 6-ft flexible hose, 17-in. flexible nozzle with shut-off valve, 8-ft rubber cord, and 5-gal tank (Apr 8, 182).

EMULSIFIED CUTTING OIL—*Gulf Oil Corp, Gulf Bldg, Pittsburgh, Penna.* Gulfcut heavy-duty soluble oil has been developed for heavy hogging cuts, fast fine cuts, boring and grinding of ferrous and nonferrous metals and alloys, including titanium alloys. Features include protection against foaming and welding, excellent surface finish as well as greater protection from rust and corrosion (Nov 4, p208).

MIST GENERATOR—*Arrow Tools, Inc, 1996 S Kostner Ave, Chicago 23, Ill.* Arrow Jet-Mist generator pin points air-liquid coolants or air-oil lubricants directly to cutting area of permanent grinding, turning, boring, milling, sawing, drilling, tapping operations. Installation uses machine tool sump pump with ¼-in. NPT air line connection for spray (Mar 25, p216).

NOZZLE HOLDER—*Aetna Manufacturing Co, 188 S York St, Bensenville, Ill.* Flexible nozzle holder, now standard equipment with Mistic Mist Generator units, simplifies application of mist cooling for any production job. Nozzle holder assembly has a detachable, plastic-covered magnet with 60-lb pull for temporary setups (Dec 2, p178).

ULTRASONIC EMULSIFIER — *Sonic Engineering Corp, 146 Selleck St, Stamford, Conn.* Autosonic, one of a line of new emulsifiers, can be used to provide a continuous supply of cutting fluid for metalworking plants. Basic principle makes use of the fluid-dynamic forces of the fluids themselves to produce the sound waves. Unit has variable output between 100 and 250 gph (Aug 12, p176).



COOLANT FILTER—*Industrial Filtration Co, Lebanon, Ind.* Delpark Filter-Matic requires little floor space, has capacity of 5 to 1000 gpm, and handles coolants, cutting oils and other liquid suspensions. Small-diameter screen tubes trap sludge; as flow is reduced, valve flow direction reverses to backwash screens. Sludge drops to bottom and is removed (Mar 11, p174).

COOLANT CLARIFIER — *DeLaval Separator Co, Poughkeepsie, NY.* Unit for use with grinding and honing machines uses centrifugal force to remove free abrasive grains and metal particles from coolants. Unit, designated Model 114, requires only 6 sq ft of space, has a dirt-holding capacity of over 3 gal, and handles all types of coolants (Jan 14, p182).

SUBMERGED-TYPE PUMP—*Brown & Sharpe Mfg Co, Providence, RI.* Midget Hi-Flow, equipped with an integral ¼-hp 3-phase or 1/10-hp single-phase motor, is designed for immersion in liquid to depth of 5¾ in., with the motor mounted 2 in. above maximum liquid level. Pump is suitable for supplying coolant for machine tools and for light transfer work (Aug 12, p168).

COOLANT FILTER—*Barnes Drill Co, Rockford, Ill.* Barnesdril Kleenall has trough-type intake distributor (formerly pipe-design) for easier maintenance (Apr 8, p184).

COOLANT UNIT — *Production Specialists, 723½ E Beecher St, West Allis 19, Wis.* Foam Cool Unit operates on jet principle and produces large volumes of light, cooling foam. Unit can be used at speeds of 100 sfm or more. Made of plastic, unit fits any size machine, can be used with any size hose, and operates on normal machine pressures (Aug 26, p164).

PLASTIC COOLANT HOSE — *Cobon Plastics Corp, 44 Lafayette St, Newark 2, NJ.* Flex - Set is available with a braided-steel outer casing to combat abrasion and cuts caused by flying hot chips or by shavings. Hose will retain any desired contour, in any position (Oct 7, p189).

COOLANT PUMP—*S Gelber & Sons, Inc, 5806 N Lincoln Ave, Chicago 45, Ill.* Bantam system uses only one moving assembly, is particularly suitable for handling highly abrasive liquids. Flow-control valve gives instant adjustment from 0 to 400 gal per hr and discharge heads to 12 ft (Apr 22, p200).

PLASTIC COOLANT HOSE — *Cobon Plastics Corp, 44 Lafayette St, Newark 2, NJ.* Kling-Flo hose can be twisted and turned into any bend and will stay set in position. Steel-clad armor protects hose from hot, sharp chips. Aerator nozzle eliminates splash and coolant throw (Jan 14, p182).

COOLANT PUMP—*Brady Pump Corporation, Muncie, Ind.* Model 505-T, designed for either portable or permanent coolant supply for small or medium-size machine tools, weighs 27 lb and pumps from 1 to 500 gpm of light oil or soluble compounds. Unit is equipped with built-in baffle and has capacity of 6 gal (Feb 25, p214).

COOLANT SYSTEM—*Trico Fuse Mfg Co, 2948 N 5th St, Milwaukee 12, Wis.* Trico-Mist has dual-valve control permitting separate adjustment of air supply and coolant for variation of coolant mixture from a very fine invisible mist to a maximum discharge. System can be operated on 25 to 125-lb air pressure (May 20, p212).

PORTABLE COOLANT UNIT—*Little Giant Pump Co, Div of Little Giant Vaporizer Co, Inc, 5101 Classen Blvd, Oklahoma City, Okla.* Little Giant, featuring submersible pump, operates with water-soluble or oil-base coolants and has filter trap. 200, 400, and 475-gph models are available (Mar 11, p198).

FILTER—*Danielson Mfg Co, Industrial Products Div, Danielson, Conn.* All-nylon filter, custom-molded to meet individual requirements, has proven effective in filtration of lube, diesel, hydraulic, and cutting oils (Sep 23, p202).

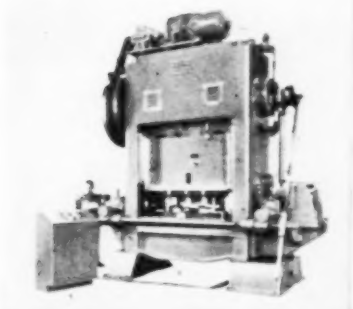
COOLANT PUMPS — *Ingersoll-Rand, 11 Broadway, New York 4, NY.* Circulating and coolant pumps permit high liquid levels. Sidewall units are built in ¾, 1, and 1½-in. sizes with single discharge, also ¾ and 1¼-in. dual discharge units. Hp range is ¼ to 5 with deliveries to 180 gpm. Immersion types are built in ¾ to 3-in. discharge sizes with hp range from ¼ to 10 and deliveries to 500 gpm (Sep 9, p198).

COOLING SYSTEM — *Triple-E Engineering Co, Racine, Wis.* Spray-Cooler portable cooling system directs finely atomized particles of coolant to point of cutting, and reportedly prolongs tool life from 50 to 500%. Unit operates on compressed air at any pressure from 50 to 125 psi. Unit sells for $37.50 (Aug 12, p178).

FORMING, FORGING, CASTING

PRESSES—*Danly Machine Specialties, Inc, 2100 S Laramie Ave, Chicago 50, Ill.* In new Quick Die Change presses the die can be located and attached to a bolster plate outside the press while a first die is being used in the press. System can be incorporated in design of any type of press. The 500-ton model illustrated has a slide stroke of 24 in. Bed and slide areas measure 108 x 72 in.; bed opening is 93 x 51 in. Speed can be 12 or 18 spm (Aug 12, p160).

TRIPLE-PUNCH PRESS — *Kenco Mfg Co, 5211 Telegraph Rd, Los Angeles, Calif.* Designed to handle exceptionally long progressive die work, this Triplex triple-punch press can also be used for punching, forming, and blanking where long dies are used. Unit consists of three 5-ton punchpresses mounted on a single frame. The drive engages the crankshaft at a central point, eliminating differences in torsional twist (Nov 18, p198).

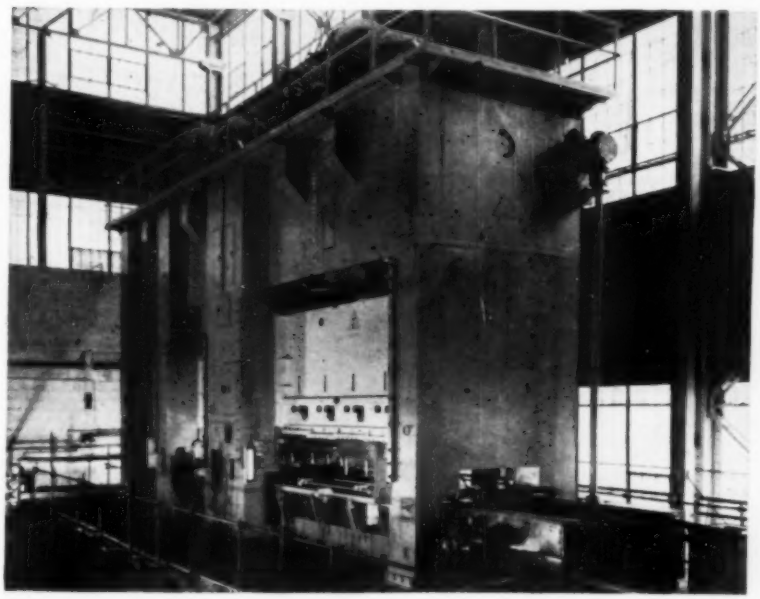


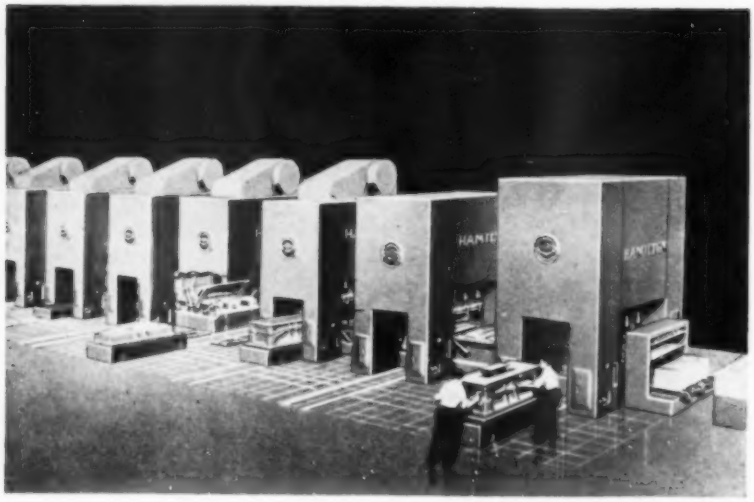
PRESS—*Press-Rite Div, Sales Service Machine Tool Co, 2363 University Ave, St Paul, Minn.* Press-Rite presses are now available with LH flywheel mounting providing more flexibility for switching from manual to automatic feeding. Mounting can be furnished on all air clutch models 10 ton and larger (Apr 8, p210).

HAND PRESS—*Queens Tool Mfg Co, Inc, 15 Front St, Rockville Centre, NY.* Micro can be used for piercing, broaching, forming, press fits and burnishing. Depth of throat is 4⅞ in., distance of ram to base ranges from 7-in. maximum to 1¾-in. minimum; base dimensions are 9 x 14 in. (Mar 25, p204).

PRESS—*Precision Welder & Flexopress Corp, 3520 Ibsen Ave, Cincinnati 9, Ohio.* 200-ton Flexopress, equipped with air-friction clutch and scrap cutter, is designed to run at speeds up to 250 spm. Unit features double feed rolls mounted integrally for accurate stock feed. Powered by 25-hp variable-speed motor, press features console control (Mar 25, p188).

MODULAR PRESS—*Clearing Machine Corp, 6499 W 65 St, Chicago 38, Ill.* Transflex press, built for GE's Washer, Dryer Div, produces two different pieceparts on alternate production runs without changing dies. Press incorporates two complete drive units, two crowns, two beds, four uprights, and five slides into single machine. It has transfer feed stroke of 40 in. and will produce over 700 stampings per hr (May 20, p190).





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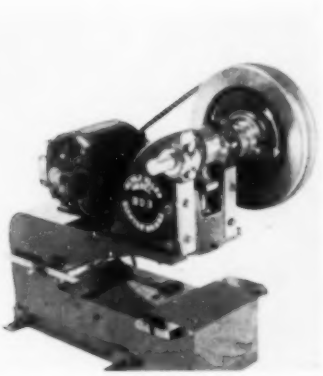
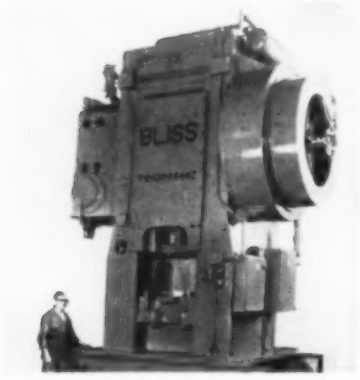
PRESSES — *Baldwin-Lima-Hamilton Corp, Hamilton Div, Hamilton, Ohio.* New press design utilizes sliding bolsters and pre-set dies. Design can be used in single press or in groups and is applicable to all sizes and types of presses—single or double action; top or bottom drive; one, two, or four point (Jul 1, p132).



PRESS—*Alva Allen Industries, Clinton, Mo.* Allen Model BD-3, 3-ton benchtype punchpress features 12-in. deep throat. It punches to center of 24-in. circle, and performs up to 300 punching, forming, blanking, cutting, drawing, or shearing operations per hr. Standard stroke is ¾ in. with ¼ to 1½-in. strokes available at additional charge (May 6, p186).



IMPACT-FORMING MACHINE — *Multi-Autoform Corp, 432 West Laurel, Glendora, Calif.* Multi-Autoformer, a 3-ram impact forming machine, features modular-designed plug-in tooling. Mechanically timed operation of three rams and two reciprocating transfer slides, together with feed roll indexing makes possible a complete cycle at every rotation of crankshaft. Specifications include working height of 8 in., open, and 6 in., closed; stroke of 2.0 in.; transfer travel of 3 in. (Jul 17, p182).

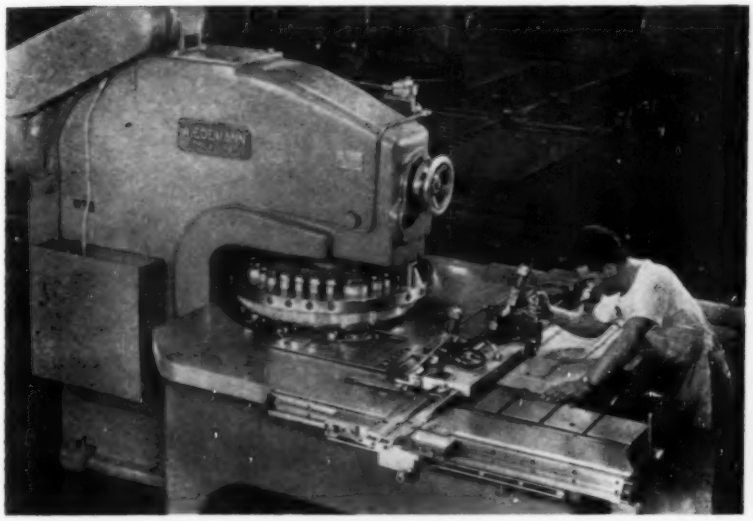
FORGING PRESSES—*E W Bliss Co, Canton, Ohio.* Among features of redesigned line of presses is a tonnage limiter which prevents accidental overloading of press. Device automatically reduces air pressure on clutch as slide approaches bottom of stroke, and increases it on return. Machines now have double clam-shell brakes (Sep 9, p196).

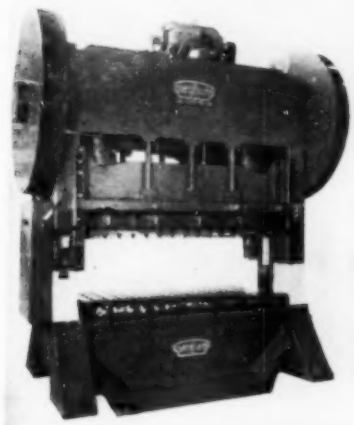
GAP PRESS—*Hamilton Press Div, Baldwin-Lima-Hamilton Corp, Hamilton, Ohio.* Line of gap presses, ranging in capacity from 100 to 300 tons in both single- and double-crank types, was developed primarily for shallow drawing, forming, and blanking in automotive industry. Units incorporate pneumatically operated flywheel brake, clutch and counterbalance (Mar 25, p206).

▶

PRESSES—*Minster Machine Co, Minster, Ohio.* New intermediate-shaft combination air-friction clutch and brake provides Minster MS2 presses with higher single-stroke efficiency, based upon rated continuous press speed, and reportedly gives them the widest speed selection ever available on large double-geared straight-side presses (Aug 26, p154).

TURRET PUNCHPRESS — *Wiedemann Machine Co, 4272 Wissahickon Ave, Philadelphia 32, Penna.* Model RA-61 has capacity of 40 tons and can be equipped with company's Speed Follower Gauge (pantograph) to eliminate setup and work layout. Rotating turret houses 20 to 28 tools which can be brought into position in 3 to 5 sec. Heavy-duty press has throat depth of 33 in. and will punch holes up to 6-in. dia in ⅛-in. mild steel or up to 1½-in. dia in ⅜-in. mild steel (Aug 12, p161).



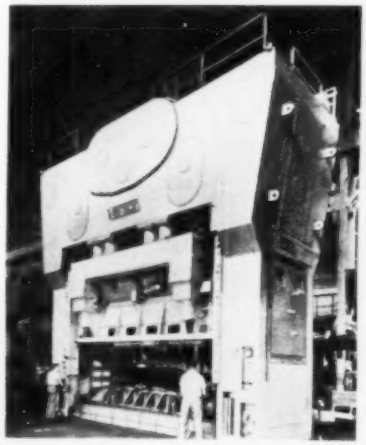


PRESSES—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Adjustable-bed presses, available for automotive and appliance industries, have no overhanging or protruding parts. Operator's panel, auxiliary power supply, flywheel brake operating lever, and safety block are recessed in right side; automatic oil-circulating system is in left side (Jul 15, p184).

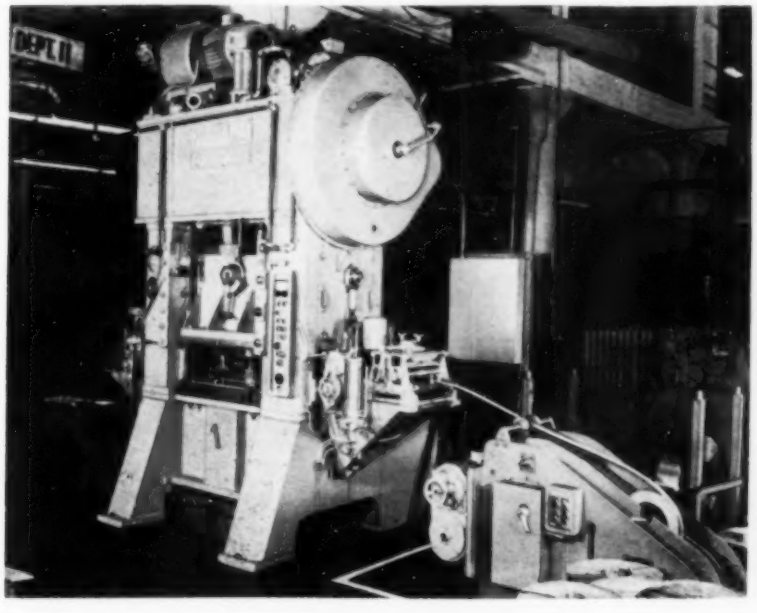
BENCH PRESSES—*E W Bliss Co, Canton, Ohio.* Line includes a 4-ton adjustable bed and horning press, 4 and 7-ton inclinable units, and a 10-ton fixed bed press. Units can be equipped with Bliss rolling key clutch or air friction clutch (Apr 22, p204).

PRESS—*Cleveland Punch & Shear Works Co, 3917 St Clair Ave, Cleveland 14, Ohio.* 200-ton, single-geared, double-crank, straight-sided press is equipped with twin drive and electrically controlled heavy-duty friction clutch with air brake. Press has 8-in. stroke, 10-in. adjustment of slide, shutheight of 30 in., slide or plunger face of 48 x 96 in., and 33 x 81-in. bed opening (Jul 1, p135).

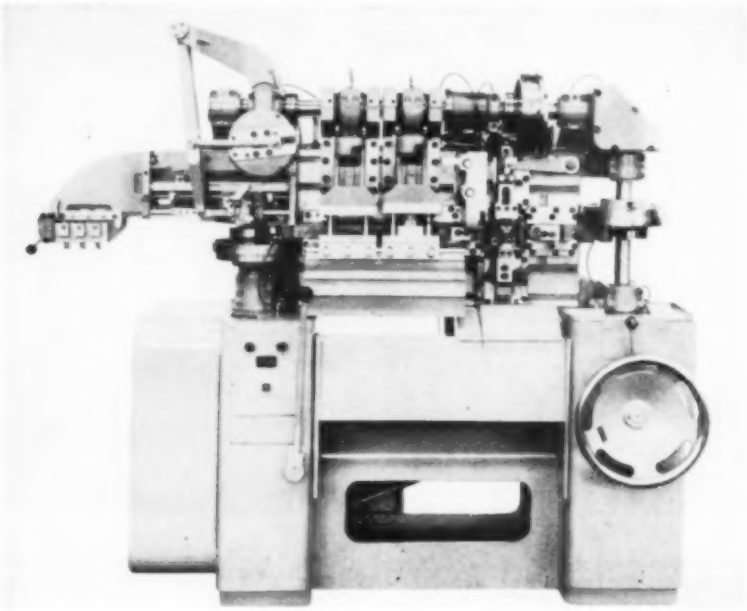
PRODUCTION PRESS—*Minster Machine Co, Minster, Ohio.* Piece-Maker P2-300 two-point, straight-side press for automatic progressive production has speed range of 75 to 150 spm. This single-geared center-drive press has standard 3-in. stroke. It is available with bed widths of 66, 72, or 84 in. right-to-left and 48 in. front-to-back. Slide is 34 in. front-to-back. (Jun 3, p150).



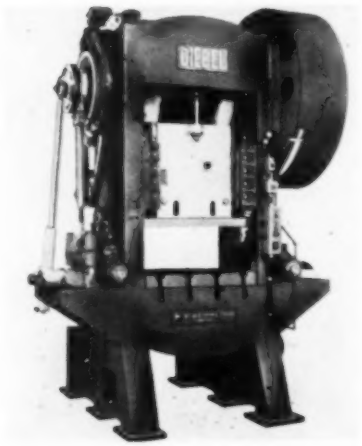
TRUCK BODY PARTS—*Verson All-steel Press Co, 1355 E 93rd St, Chicago 19, Ill.* Pieces are blanked and drawn on 2500-ton-capacity double-action mechanical press which stands over 38 ft high and has bed and ram measurement of 90 x 208 in. Press has standard speed of 7 spm (Mar 25, p220).



TWO-POINT PRESSES — *Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Series SA-2 Automatic, two-point, straight-side presses are designed to perform variety of blanking, forming, drawing, and perforating operations in long or short runs. Units are available in capacities of 60 to 200 tons (non-geared) and 75 to 300 tons (geared). Automated feed device permits coil stock to be fed at rates up to 100 fpm (Dec 16, p166).



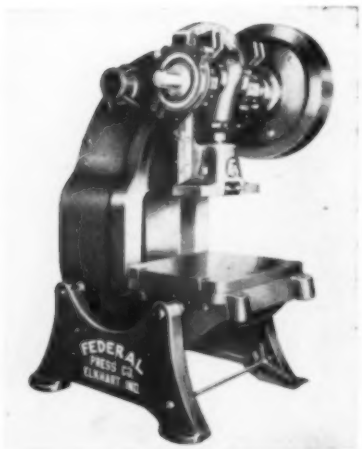
VERTICAL FOUR-SLIDE MACHINE—*Torrington Mfg Co, Torrington, Conn.* The Verti-Slide, reported to be the only all-purpose vertical 4-slide machine made in the US, offers superior visibility and accessibility to all parts of machine, particularly the tooling area, and reduced floor space. Adjustment of feed stroke, cams, presses and cutoff are made at front of the machine (Oct 21, p200).



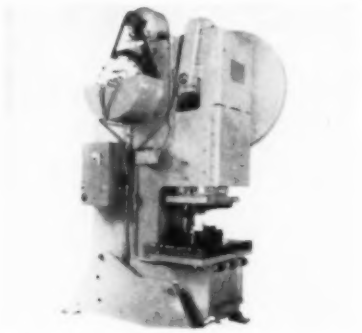
MOTORIZED RAM ADJUSTMENT—*Verson Allsteel Press Co, 9347 S Kenwood Ave, Chicago 19, Ill.* Unit, available as optional equipment on company's OBI presses, has ½ to 1-hp motor mounted directly on press ram. Pinion gear mounted on motor shaft revolves adjusting screw which is threaded in pitman and connected to ram, thus moving ram up or down, depending on travel of screw (Jul 15 p185).

AUTOMATIC PRESS—*Di Machine Corp, Dept A, 2710 W Irving Park Rd, Chicago 18, Ill.* 150-ton press, designed for lamination work, progressive blanking and forming and large blanking work, features cylindrical ram, air clutch and spring-applied brake, and safety shut-off devices. Main specifications: left to right by front to back, 40-32 or 56-32 in.; width of feed, 18 in.; length of feed, 0 to 13⅝; speed range, 70 to 210 spm (Mar 11, p184).

HORNING PRESS—*Service Machine Co, 2310 W 78th St, Chicago 20, Ill.* Rousselle 40-H handles operations such as forming, punching, and riveting of hollow, odd-shaped or cylindrical work. Press has adjustable-bed table to accommodate dies and fixtures requiring large die space between bed and slide. Units of 5 to 40 tons are offered (Apr 8, p196).

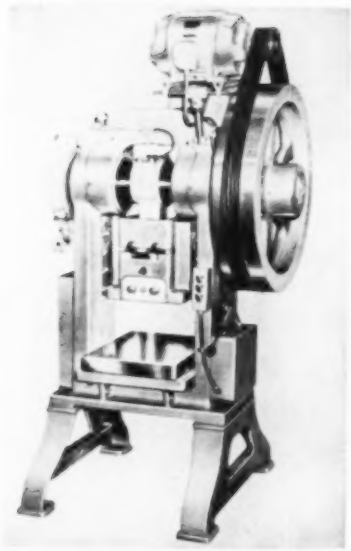


PRESS—*Federal Press Co, Elkhart, Ind.* Model 55 press is designed with oversize dimensions in order to accommodate larger dies. This 56-ton-capacity press will economically handle laminations, trimming of die castings, and similar bulky operations. Press is available in either flywheel or geared type, in mechanical or air-clutch models (Jul 15, p185).

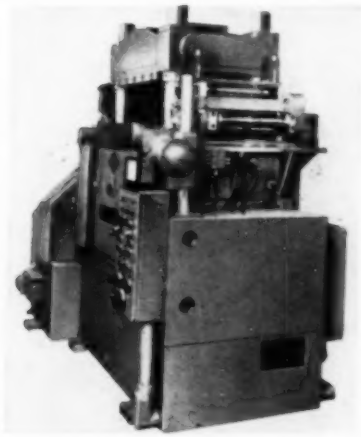


OBI GAP PRESSES—*A B Farquhar Division, The Oliver Corp, 126 Duke St, York, Penna.* Press is available in four capacities: 75, 110, 150, and 200 tons. Long gibways for accurate slide alignment and box-type gibs are features of the new design. Unit has a V-belt motor drive as standard equipment with electric pushbutton safety controls. Units are built to JIC standards (Sep 23, p192).

HAND PRESS—*Carisi's Associates, 2356 McDonald Ave, Brooklyn 23, NY.* Small toggle press is capable of forming a double flare on aluminum or copper tubing ranging from ⅛ to ½ in. in diameter. Operation takes about 30 sec. Price, with one set of punches and die, is $300. Additional set of punches and die available for $40 (Oct 7, p182).



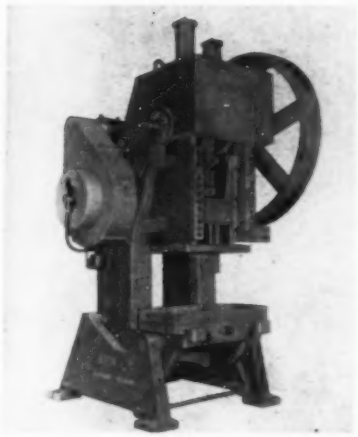
PRESS—*Perkins Machine Co, Warren, Mass.* No. 8 Model I straight-side flywheel press has a solid frame and capacity of 80 tons. Made to customer's specifications, press is available both plain and geared and with air clutches. Machine can be used for blanking, forming and embossing (Dec 2, p149).



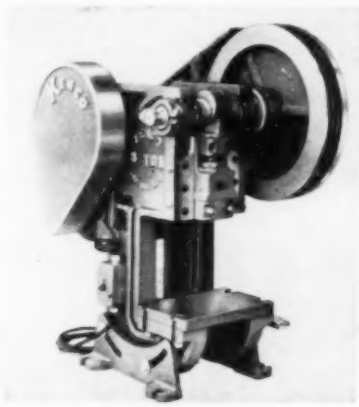
STAMPING PRESS—*Alpha Press & Machine, Inc, 9281 Freeland Ave, Detroit 28, Mich.* Alpha 75-ton double-crank direct drive press handles long, unbalanced progressive dies, and is operated at shoulder level. Press is 7 ft 5 in. high; standard stroke of 2 in., max. of 4 in.; 150 standard spm. Roll feed handles metal up to 13½ in. wide and 3/16 in. thick Feb 25, p200).

PUNCHPRESSES—*Diamond Machine Tool Corp, Pico, Calif.* Redesigned line of Multi-Max punchpresses is available in capacities of 40 to 125 tons; 2 and 4-post models; with speeds from 40 to 1000 spm; bolster and ram areas from 2 x 2 ft to 4 x 12 ft; and with unlimited shut die height. Material can be fed from front to back, back to front, or side to side (Sep 9, p190).

SINGLE-POINT PRESS — *Minster Machine Co, Minster, Ohio.* Model P-1 Piece-Maker press, available in capacities of 75, 100 and 150 tons, is designed for automatic operation and is especially suited for progressive die blanking and perforating operations that involve heavy shock loads. Fixed or variable speed drive is available. Presses are of vertical type but can be furnished permanently inclined to 27½° for gravity part drop-out (Dec 30, p130).



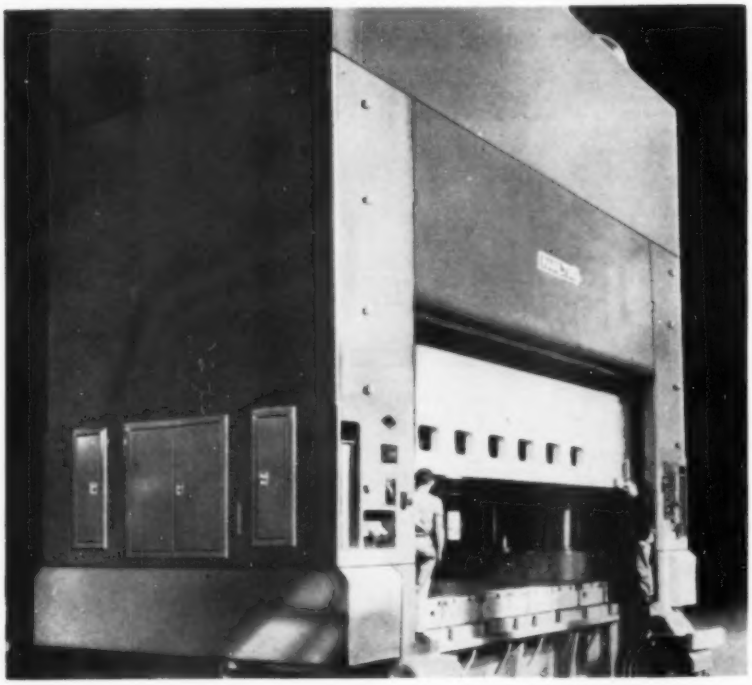
INCLINABLE PRESS—*Johnson Machine & Press Corp, Elkhart, Ind.* Model 150 open-back, inclinable press has capacity of 150 tons, and features box-type ram, air clutch, air-actuated spring-set brake, 110-v electrical controls, standard die space of 22 in. with max of 39 in. available on special order. Offered exclusively in the geared type unit has a standard 6-in stroke (Aug 12, p163).



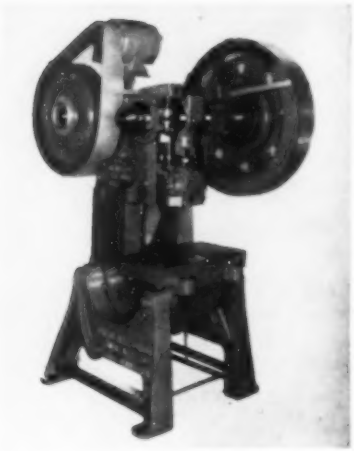
PUNCHPRESS—*Kenco Mfg Co, 5211 Telegraph Rd, Los Angeles 22, Calif.* Quiet operation and quickly varied working speeds are major features of 8-ton slow-speed punchpress. Press operates at 90 spm; other speeds from 50 to 200 spm are readily obtained by changing pulley wheel. Both standard and deep-throat models are available (Sep 9, p200).

PRESS—*Cleveland Punch & Shear Works Co, Cleveland 14, Ohio.* Model S2-500 two-point press is equipped with drum-type air friction clutch, with combination clutch and motor control. Automation control for auxiliary feeding is provided on double-geared unit. Other specifications: slide stroke, 12 in.; slide adjustment, shut height 38 in.; bed and slide area, 36 x 60 in.; rpm, 30 (Feb 25, p190).

PRESS—*Benchmaster Mfg Co, 1835 W Rosecrans Ave, Gardena, Calif.* 2-ton fixed-bed, gap-frame press has 4½-in.-wide opening through back and a bed measuring 4½ x 7½ in. Max shut height, bed to slide, is 4½ in. with standard stroke of ¾ in. Press operates at 280 to 290 spm (May 6, p200).



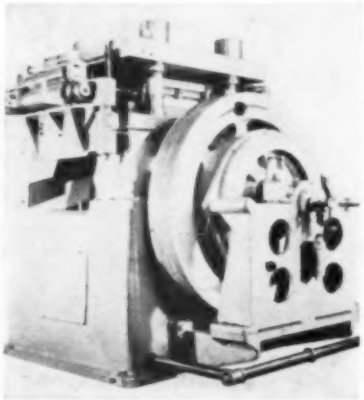
PRESS—*Baldwin - Lima - Hamilton Corp, Hamilton Div, Hamilton, Ohio.* Automotive body stampings are handled on triple-action press at Ford Motor Co's Chicago Heights stamping plant. Press has bolster and blankholder dimensions of 200 by 100 in.; features bottom-drive construction; all three slides are actuated from single main drive and are mechanically synchronized (May 20, p194).



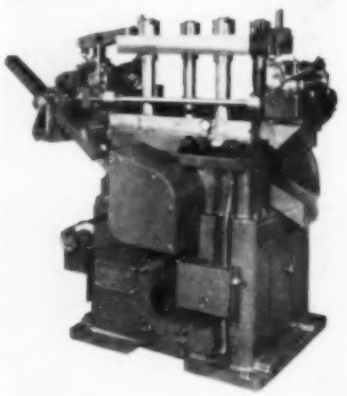
PRESS—*Sales Service Machine Tool Co, Press-Rite Div, 2363 University Ave, St Paul, Minn.* Designed for drawing and other backgeared applications, Press-Rite 37-ton OBI press has Unicast alloy frame, 3¼-in.-dia crankshaft, and 14 x 25-in. bolster. Standard stroke is 2½ in. but can be increased to 4 in.; standard shut height is 10 in. but can be increased to 20 in (Aug 12, p164).

DEEP THROAT PRESS—*Service Machine Co, 2310 W 78th St, Chicago 20, Ill.* Model 4G press has rated capacity of 40 tons, and is ideal for sheet metal work, trimming plastics, die castings, and other materials such as paper, fiber, and rubber. It has throat depth of 24 in., from ram center to frame, and will take sheets up to 48 in. wide (Jun 3, p168).

PRESS—*Clearing Machine Corp, Div of US Industries, Inc, 6500 W 65th St, Chicago 38, Ill.* 650-ton double-action press requires no pit or foundation. It can be moved within plant and be readied for work almost instantly. Electrical controls and accessory equipment are built into frame. Master control panel, press air manifold, limit switch, air manifold, and terminal block cabinets are built into press uprights (Feb 25, p194).

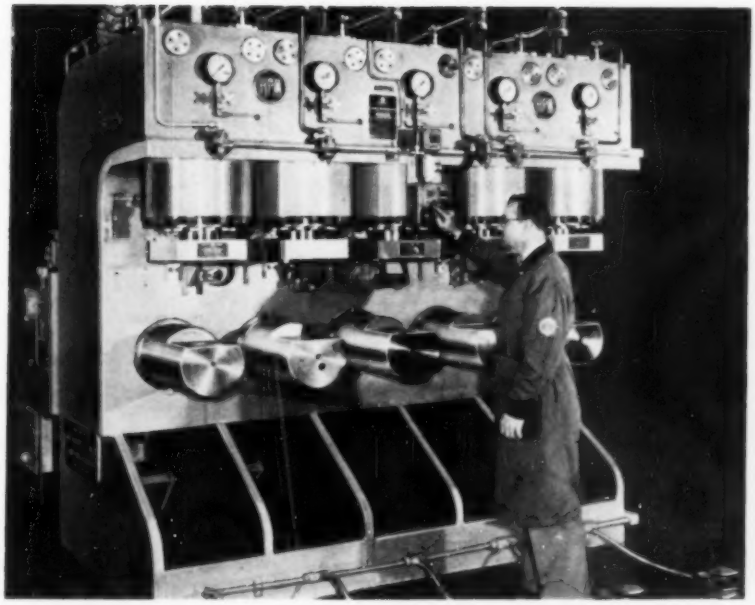


PRESS—*Brandes Press Co, 6408 Euclid Ave, Cleveland 3, Ohio.* Large-flywheel press of 350-ton size is capable of 150 spm. Total weight of unit is 102,000 lb. Press is equipped with air-operated dry-disk friction clutch and brake capable of stopping press at any point in stroke; double-roll feed; and one of three types of feed eccentrics: quick feed, standard 180° feed, or long feed (Jan 14, p174).



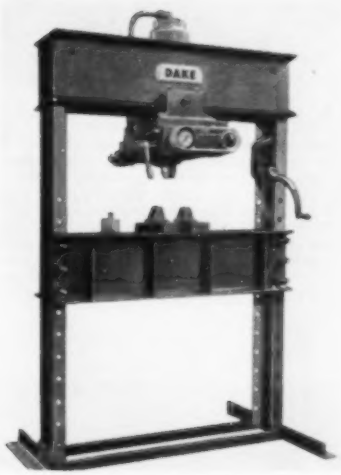
AUTOMATIC PRESS—*Brandes Press Co, 6408 Euclid Ave, Cleveland 3, Ohio.* 30-ton press can operate at speeds up to 500 spm; is reported ideal for blanking large quantities of small parts. Unit is 64 in. high. Standard die area is 10 x 31 in. Press is also available in double-throw version with die area 30 x 31 in. (Apr 8, p180).

ADJUSTABLE-BED PRESSES—*E W Bliss Co, Canton, Ohio.* Line of presses with capacities ranging from 50 to 150 tons is fully enclosed series with box crown, box slide, and completely built-in controls. The 18 x 24-in. bed of the 50-ton model illustrated can be raised or lowered 9 in., making possible a shut-height adjustment from 11 to 20 in. Model is 37 in. wide and 74 in. front-to-back (Apr 8, p174).



HYDRAULIC PRESS — *Hydraulic Press Mfg Co, Div of Koehring Co, Mt Gilead, Ohio.* High-explosive 8-in. shells are hot pierced on 1000-ton special hydraulic press. Press has bed area of 66 x 60 in., 98-in. daylight, 60-in. stroke, and is equipped with 150-ton hydraulic ejector with 24-in. stroke (May 6, p190).

HYDRAULIC PRESSES—*Distributed by A Dale Herman, Inc, 17071 Ventura Blvd, Encino, Calif.* Series 300A hydraulic press is designed so that it is possible to obtain a press with 65-ton capacity and convert it to as much as 300-ton capacity. Conversion kits cover 65, 125, 170, and 300-ton conversions. Specifications for all four capacities: platen, 26¾ x 32 in.; daylight opening, 25 in.; opening rate, 2.7 ips; closing rate, 1.55 ips; stroke, 12 in. Presses are manufactured by King Machine & Mfg Co, Los Angeles, Calif (May 20, p193).



AIR-HYDRAULIC PRESS — *Dake Corp, Grand Haven, Mich.* Designed for bending, straightening and forcing, air-operated hydraulic press is available in 16 models, ranging in capacity from 25 to 150 tons. When control knob is turned, the ram advances at high speed until it comes into contact with work. Then it automatically changes to power stroke. Prices start at $675 fob (Dec 2, p158).

HYDRAULIC PRESS — *Fjellman American, Inc, Joliet, Ill.* Utility forcing press has adjustable pressures right up to max 200-ton squeeze. It loads from any position within 300° arc with all controls and gages located so operator has absolute control. Press has downward speed of 140 ipm up to 14 tons counter pressure. 7¼ ipm between 14 and 150 tons, and return speed of 250 ipm (May 20, p195).

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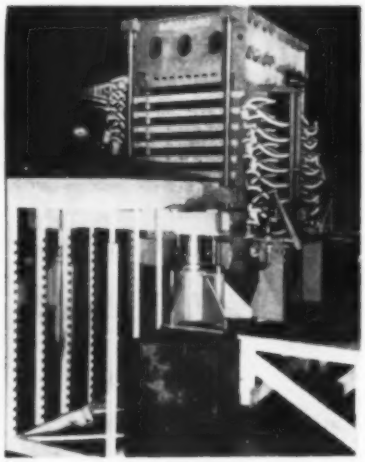
HORN PRESS—*Hydraulic Press Mfg Co, Div of Koehring Co, Mt Gilead, Ohio.* Five-station open-gap horn press is designed for operations formerly requiring several presses. Each of five rams has capacity of 100 tons. Maximum daylight between ram adapter and horn is 12 in.; each ram has 6-in. stroke. Unit is powered by 50-hp electric motor and 100-gpm pump (Oct 7, p168).

POWDER-METAL PRESS—*Baldwin-Lima-Hamilton Corp, Box 154, Hamilton Div, Hamilton, Ohio.* Model 30W press is pressure-rated at 30 tons, and accepts full line of accessories. Drive is variable from 10 to 40 spm. Specifications: head stroke, 6¾ in.; ejection capacity, 20 tons; ejection stroke adjustable to 4½ in.; die opening, 10 in. (Apr 22, p186).

VERTICAL PRESS—*Williams-White & Co, 801 Third Ave, Moline, Ill.* 500-ton press is laboratory unit for testing and experimentation purposes. Speed of moving platen is adjustable from 0 to 170 ipm closing, 0 to 87 ipm opening. Hydraulic pressure is adjustable; standard stroke is 24 in.; daylight can be set at 24, 30 or 36 in. (Apr 22, p196).



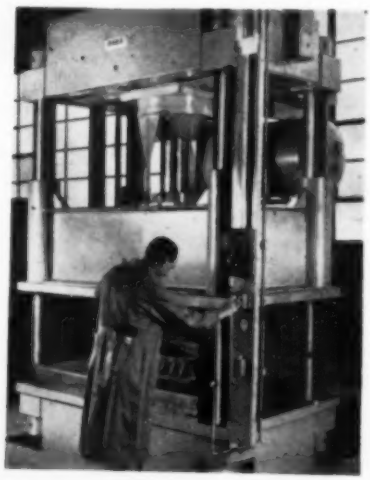
LAMINATING PRESS — *Birdsboro Steel Foundry & Machine Co, Birdsboro, Penna.* Multiple-opening steam platen press with side-plate construction is designed for quick loading and unloading. Multiple-opening elevator attached to front of press permits loading every other opening during pressing cycle. Machine is driven by two 34-in. rams at an operating pressure of 2500-psi water (Apr 22, p190).

ANNULAR RINGS — *Modern Engineering Service Co, 1695 Twelve Mile Rd, Berkley, Mich.* Rings in sizes from 16 to 54-in. dia are formed or perforated on Jacy index and pierce machine which is available in sizes up to 65 tons. Index table features infinite resolution from one to 21,600 divisions of a circle. Electronic console houses manual and pushbutton controls. Table is available in diameters of 18, 24, 36, and 45 in. with either electric or hydraulic drive (Dec 16, p178).

HYDRAULIC PRESSURE SYSTEM —*Haller, Inc, 684 Ann Arbor Rd, Plymouth, Mich.* System is said to simplify and control pressing to density powdered metal and ceramic parts. It is available for the 8, 13, 18, and 40-ton models of Haller compacting presses. Side-mounted unit consists of an oil-filled accumulator charged to 100 psi with nitrogen, a sandwich-design check valve, and a relief valve (Sep 23, p190).

COINING PRESS—*Haller, Inc, 684 Ann Arbor Rd, Plymouth, Mich.* 40-ton automatic coining and/or sizing press handles metal-powder parts up to 1½ in. high. First, part is positioned in die by a core pin, thereby sizing ID. Then, upper punch enters die cavity and coins part to predetermined thickness (density) which consequently fills out circumference of the cavity representing requested OD (Sep 9, p194).

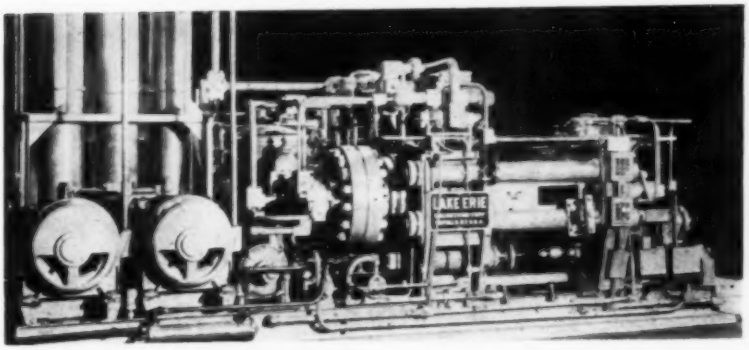
STRAIGHTENING PRESS — *Williams-White & Co, 801 Third Ave, Moline, Ill.* Press has table area of 124 x 60 in., 26 in. of daylight over table, and stroke of 14 in. Gantry travel of 100 in. is controlled by handwheel. Ram has an advance speed of 42 ipm, 5½ ipm at full pressure, return speed of 78 ipm (Apr 8, p170).



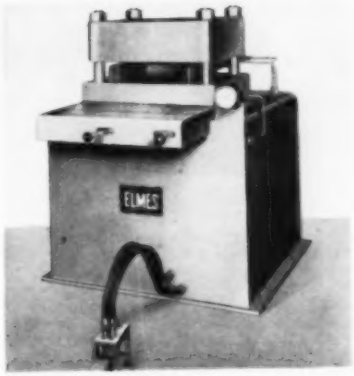
PRESS—*Dake Corp, Grand Haven, Mich.* 300-ton hydraulic press tests dies for Cripps Engineering & Tool Co, Chicago, before shipment. Single- and double-action presses are available, in 18 electrically operated models (Apr 22, p208).

COMPACTING PRESSES — *F J Stokes Corp, 5500 Tabor Rd, Philadelphia 20, Penna.* Series of sequence controlled metal powder compacting presses, with capacities from 50 to 500 tons, provides much higher degree of uniformity in part density and greater accuracy in dimensions. Features include sequenced motions, simultaneous ejection, self-contained hydraulic power unit, and box-type feed which covers entire area of piece (Dec 30, p125).

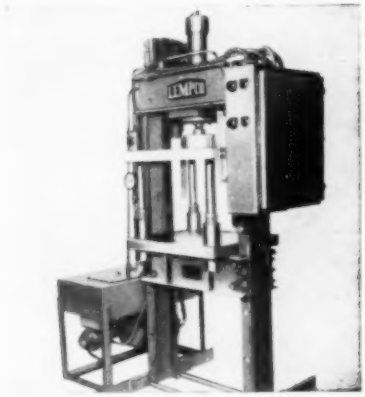
COLD EXTRUSION PRESS — *Lake Erie Machinery Corp, 507 Woodward Ave, Buffalo, NY.* Torsion-bar anchor housings for automobiles have been extruded from type 1035 steel at a rate of 525 per hr in press which has a main ram stroke of 18 in. Approach speed is 1200 ipm; extrusion speed is 500 ipm at 2550 psi (Aug 12, p178).



HYDRAULIC TRIM PRESSES—*Buffalo Metal Container Corp, Bausenbach Hydraulics Div, 75 Meadow Rd, Buffalo 16, NY.* Heavy-duty, fast-acting, high-velocity, hydraulic trim presses are available in platen sizes of 15 x 18 up to 36 x 54 in., offering 12, 15, and 18-in. strokes, with shut heights of 5, 10 and 15 in. Both two- and four-post types are available in capacities of 13, 20, 30, 40 and 50 tons (Dec 30, p128).

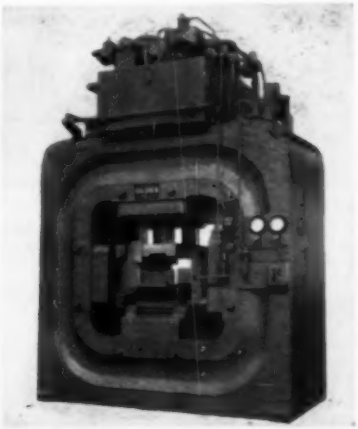


MOLDING PRESS—*American Steel Foundries, Elmes Engineering Div, 1150-A Tennessee Ave, Cincinnati 29, Ohio.* Standard Hydrolairs, small low-cost, pumpless, motorless hydraulic presses for plastics molding, laminating, compacting, are available in 30, 50, 75, and 100-ton models. Specially designed unit has a moving-down platen instead of standard moving-up type (Oct 21, p222).



TRIM PRESS — *Lempco Industrial, Inc, Machine & Tool Div, Bedford, Ohio.* Model TP5-644 die-casting trim press features fast approach and retraction speeds, and adjustable limit switches to control open and shut heights. Press is available in capacities of 5 to 25 tons. Trim area ranges from 20 x 23 in. to 41 x 41 in.; stroke from 16 to 24 in. (Dec 2, p160).

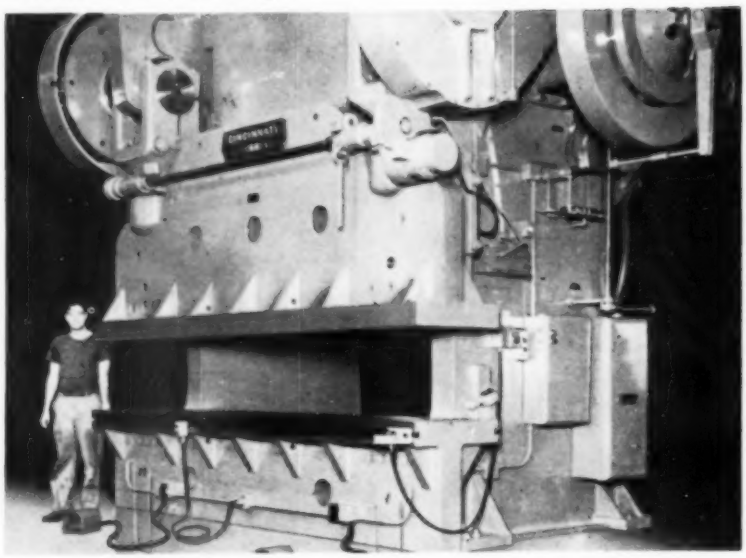
MULTIPLE HYDRAULIC PRESSES —*Allied Engineering & Production Corp, 2421 Blanding Ave, Alameda, Calif.* Presses for molding rubber, plastic or ceramic are available as single, double, triple, or quadruple units. Each section has capacity of 50 tons; platens are 13 x 13 in. Temp range is 150 to 550 F; ramstrokes and daylight openings are 13 in. Models are furnished with or without heated platens (Nov 4, p190).

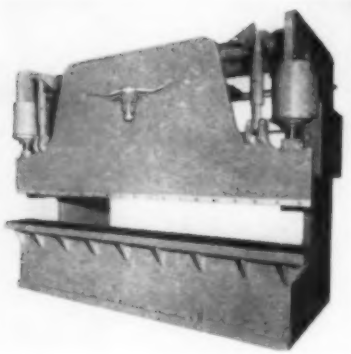


HYDRAULIC PRESS — *American Steel Foundries, Elmes Engineering Div, Cincinnati 29, Ohio.* Angle-type powdered metal forming press features box-type construction to minimize deflection. Capacity of main ram is 1000 tons, side ram 750 tons. Independent hand lever is provided for each ram, with mechanical interlock preventing movement of main ram until predetermined tonnage is reached on side ram (Aug 12, p166).

AIR HYDRAULIC PRESS—*Studebaker Hydraulic Products Co, 1733 N 33rd Ave, Melrose Park, Ill.* Speed press has dual pressure booster which advances ram to contact work at high speed with nominal power before full rated pressure is applied. Air savings of 75% are reported. Standard models are 1½, 3, 5, and 10-ton capacity, based on 80-psi air supply. Many combinations of automatic and semi-automatic operations possible. (Jan 14, p166).

PRESS BRAKE—*Cincinnati Shaper Co, Cincinnati 25, Ohio.* Press brake, Series 40, is 8 ft 6 in. between housings and has an over-all die surface of 12 ft. Both bed and ram are 28 in. wide. Stoke is 8 in., shut height is 22 in. Two-speed transmission permits operation at 5 to 20 spm. A power takeoff from main shaft drives feeding and withdrawal unit (Nov 18, p198).





HYDRAULIC PRESS BRAKES — ***Perry Co, PO Box 2057, Waco, Texas.*** New line of presses, tradenamed Longhorn, features capacities of 160 to 1500 tons. Special models built to specifications are also available. Designed to handle all metal forming operations, units can also be used for trimming and punching vacuum-formed plastics as well as other materials (Nov 4, p194).

PRESS BRAKE—*Benchmaster Mfg Co, 1835 W Rosecrans, Gardena, Calif.* Two 5-ton fixed-bed gap-frame presses, operating in tandem from single crankshaft common to both presses, perform functions of small press brake. Crank has stroke of 1⅛ in. and operates at 230 spm (Aug 12, p182).

BRAKE GAGE—*Addresso Mfg Co, 9105 W King St, Franklin Park, Ill.* Two or a series of Model 750 gages are fastened to a ¾ x 2-in. bar in rear of press brake. Each has micrometer setting and locknut. Scale mounted on side has pointer to facilitate reading the 0 to 3½-in. range (Feb 25, p192).

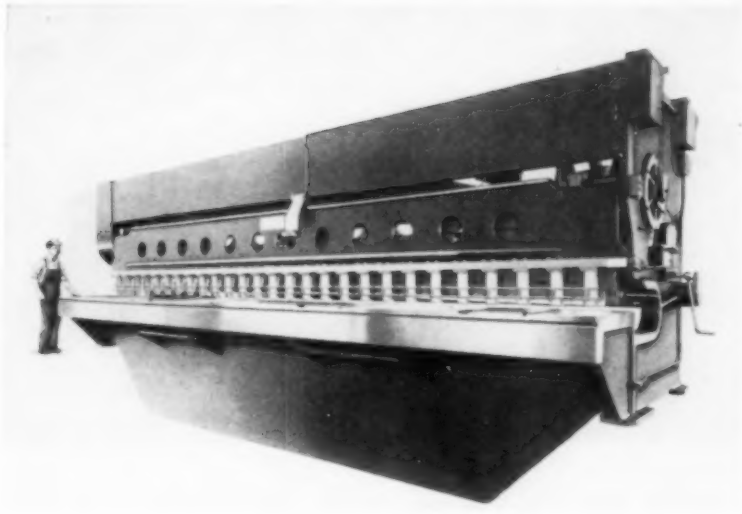
PRESS BRAKES—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Available in 30 and 50-ton models, with over-all bed lengths of 6 to 12 ft, streamlined press brakes feature electro-pneumatic friction clutch and brake. Portable power treadle brings new convenience to operator. A 50% deeper throat is made possible by use of heavier, deeper uprights (Sep 9, p192).

RING AND CIRCLE SHEAR—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Model 33 RC ring and circle shear, featuring power downfeed and finger-tip control, is designed to cut commercially perfect circles, circular holes and rings in material as heavy as ¼-in. mild steel. The pushbutton-controlled power downfeed drives the cutter down into the material automatically as cut progresses (Nov 18, p190).

HYDRAULIC PRESS BRAKE — *Superior Machine Co, 1389 Heiston Pl, Memphis 4, Tenn.* Available in capacities from 50 to 500 tons, press brake performs bending, braking, drawing, forming, piercing and many other operations. Total over-all die surface ranges from 6 to 24 ft. Standard shut die height is 6 in., standard daylight is 6 in. Throat clearance from center of dies is 12 in. (Nov 18, p210).

CABINET PANELS—*Pacific Industrial Mfg Co, 848 49th Ave, Oakland 1, Calif.* Panels are blanked and formed on single hydraulic press brake using progressive dies. Machine replaces two independent punchpresses at Acme Visible Records, Crozet, Va. Machine handles blanking and forming operations, can be set up to use up to 4 independent dies at one time (Aug 26, p162).

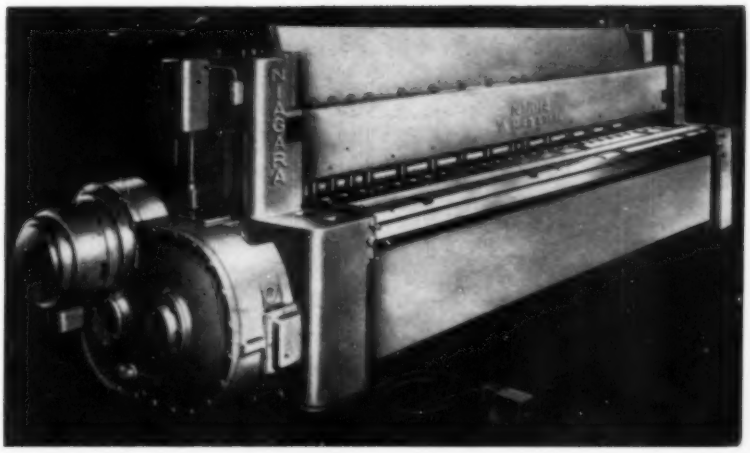
WIRE-TRIMMING MACHINE — *Artys Sales Co, 11 Broadway, New York 4, NY.* Machine gives clean cut-off and operates at 450 spm as operator guides wire products, such as trays, baskets, fan guards, and cages along cutting die. Machine comes with ¾-hp motor and has max capacity of 5/16-in.-dia wire (Aug 12, p184).



SHEAR—*Cleveland Crane & Engineering Co, Steelweld Machinery Div, Wickliffe, Ohio.* Pivoted blade shear cuts 26 ft of ⅜ in. mild steel at speed of 30 spm. Features include one-piece frame, air-operated clutch and brake, Micro-set knife adjustment, electric footswitch operation, and air-operated blade counterbalance. Shears can be built to cut lengths up to 30 ft and thicknesses to 2 in. (Jun 17, p192).

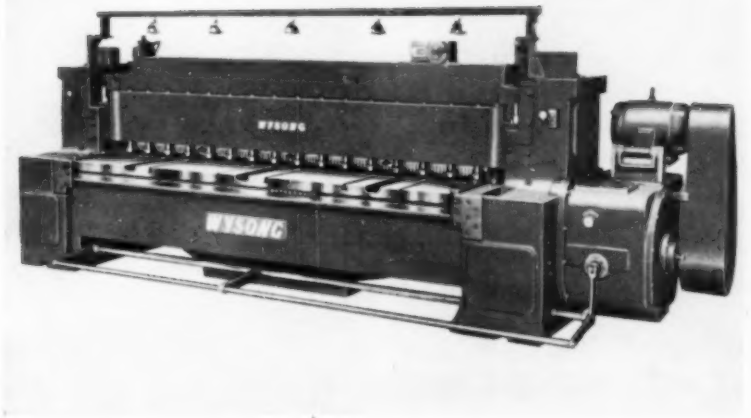
GUILLOTINE SHEARS—*Imported by S & S Machinery Co, 140 53rd St, Brooklyn 32, NY.* Scharringhausen shears (German) are built with undercrank or overcrank drive for cutting metal sheets up to 15 ft long and 1¼ in. thick. Model HS/S has capacity of 8 ft x 14 gage (Sep 9, p198).

ANGLE IRON SHEAR—*W A Whitney Mfg Co, 636 Race St, Rockford, Ill.* Shear is hydraulically operated and has capacity of 4 x 4 x ¼-in. angle iron, ⅜ x 3½-in. flat, ⅝-in. round, ½-in. square bars, or 1-in. hollow square tubing. Additional blades are available to shear 5/16 x 6-in. flat stock; bending dies form right-angle bends in round, square, and flat stock up to ⅜ x 6 in. (Aug 12, p174).



POWER SQUARING SHEAR—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Niagara line features hinged back gage angles; adjustable, parallel micrometer back gages; remote control electric foot switches; and stationary safety guards. Line includes 59 models with capacities from 16 gage to 1-in. mild steel, cutting lengths from 4 to 20 ft (Mar 11, p177).

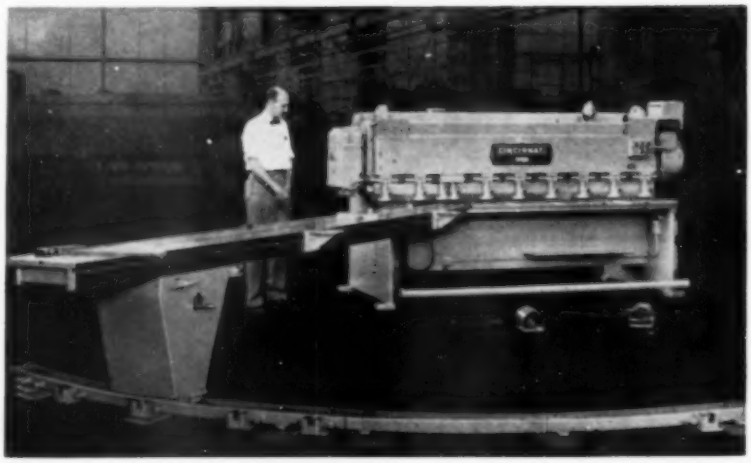
METAL SHEAR—*General Products Co, Fredericksburg, Va.* Plantmaster decoils, straightens, shears, and stacks in single operation. It will cut metal up to 18 gage in widths to 4 ft. Because of improved method of feeding and straightening, unit requires less space than machines currently on market. Special unit for shearing tapered blanks is also available (Oct 7, p178).



HYDRAULIC SHEAR—*Pacific Industrial Mfg Co, 848 49th Ave, Oakland 1, Calif.* By adjusting rake angle of ½-in.-capacity shear to ¾ in. per ft, shear will cut ¾-in. steel plate with force normally required to cut ½-in. plate. In cutting ¼-in. steel, rake angle is reduced to 3/32 in. per ft and shear will cut strips 24 in. long at rates up to 60 per min (May 6, p173).

SHEARS—*Wysong & Miles Co, 625 Fulton St, Greensboro, NC.* Power squaring shears with capacity of ⅜-in. mild steel and cutting lengths of 6, 8, and 10 ft feature hi-tensile castings in their construction, a rugged 36-in.-range back gage, power holddown, automatic lubrication, and solid 4-edge blades (Jun 3, p150).

SHEAR—*Cincinnati Shaper Co, Cincinnati 25, Ohio.* Model 1008 is equipped with special, pivoted, angular shearing gage which makes it possible to accurately shear steel sheet at any one of a number of different design angles, within a total angular tolerance of only 2 min of arc. All gage stops are equipped with micrometer adjustments to provide accurate lengths. Speed of shear is 65 spm (Dec 2, p152).



SHEARS—*Curry Air Shear Corp, 941 Oliver Bldg, Pittsburgh 22, Penna.* Air-operated shears, for cutting strip up to 3/16 in. thick in mild steel and widths from 24 to 84 in., are recommended for cutting hot or cold carbon steel, stainless, copper, aluminum, and other metals. Unit is equipped with air filter, lubricator, muffler, hydraulic shock cylinder (Feb 11, p161).

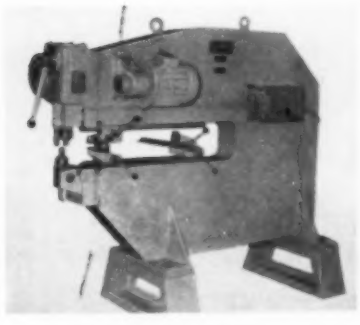
POWER SQUARING SHEARS — *Whitney Metal Tool Co, 724 Forbes St, Rockford, Ill.* New features include three adjustable springs to insure positive-acting, non-slip grip; gages have crank adjustments and calibrated scales. Blades are made with four cutting edges; guards have clear plastic panels to provide visibility of cutting area. Available in 36, 52 and 72-in. models (Apr 8, p184).

TURRET PUNCH—*Rotex Punch Co, 2350 Alvarado St, San Leandro, Calif.* Model 18-AH air-operated turret punch punches 2-in. hole in 12-gage mild steel or in 14-gage stainless steel. It supplies 18 stations ranging from 5/32 in. to 2 in. Odd-shaped punch and die sets available (Jan 14, p160).

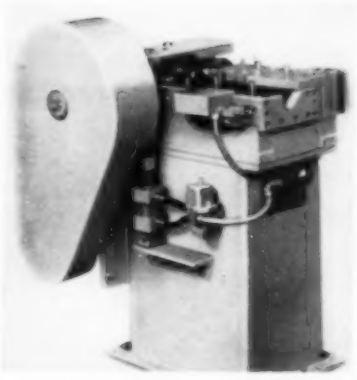
CIRCLE-CUTTING DEVICE—*American Pullmax Co, 2455 N Sheffield Ave, Chicago 14, Ill.* Outside attachment, designed for Pullmax Models P-3, P-5, P-7, and P-9 universal shearing and forming machines, permits cutting of circles of unlimited diameter as well as rings and large radii. Attachment is normally supplied in 4-ft lengths but any length may be obtained (Sep 23, p186).

NOTCHER—*Wallace Supplies Mfg Co, 1306-12 Diversey Pkwy, Chicago 14, Ill.* Pedi-Notcher reportedly can double notch both ends of tube in 15 sec or less, and can handle as many as 7 individual dies at one time. Unit is available in 6 models with capacities ranging from 1- to 4-in. max OD (Apr 22, p208).

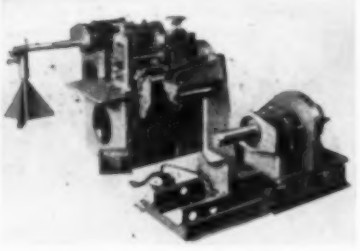
TUBE-PIERCING MACHINE—*Koppy Tool & Die Co, 1530 Farrow Ave, Ferndale 20, Mich.* Machine pierces round and/or irregular shaped holes in tubes up to 3-in. dia at speeds up to 600 tubes per hr. As many as three heads may be mounted on a single base. Model AA pierces two round or rectangular holes at max over-all distance of 2¾ in., or cuts a slot up to 2¾ in. long. Model AB has a max cutting distance of 4½ in. (Dec 30, p124).



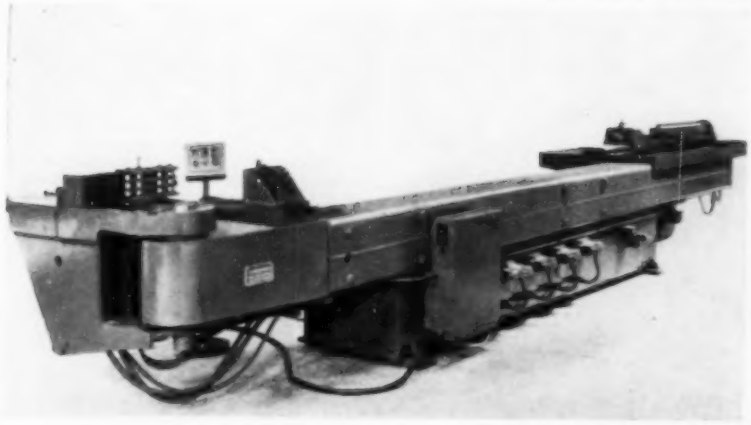
SHEARING AND FORMING MACHINE—*American Pullmax Co, Inc, 2455 N Sheffield Ave, Chicago 14, Ill.* Model P-9 has capacity of ⅜ in. in mild steel plate and ¼ in. in stainless steel plate. Adjustment permits eight different stroke lengths from 0.008 to 0.320 in. Machine is capable of straight, circle, and irregular shearing in addition to slot cutting, beading, dishing, and flanging (Jul 29, p142).



FLARING MACHINES — *Automation Associates, Inc, 1444 East 11 Mile Rd, Madison Heights, Mich.* Machine is designed to produce a double flare at high speeds on steel and nonferrous tubing, at a single tube position. Capacity is ½-in. OD x 0.034-in. steel tubing and up to ⅝-in. OD for copper, brass or aluminum tubing. Operating speed is 180 spm (two strokes per flare) or 90 flares per min at 100% efficiency (Dec 30, p127).

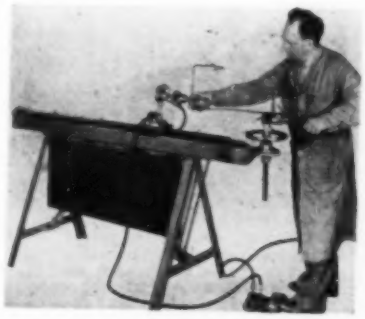


SLITTERS—*H J Ruesch Machine Co, 407 Mulberry St, Newark 2, NJ.* Slitters designed to handle materials ranging from ultra-thin gages up to ¼ in. in ferrous and non-ferrous metals produce close-tolerance widths by controlling material at cutting point with stripping rings. Units operate at up to 1000 fpm (Feb 11, p 164).



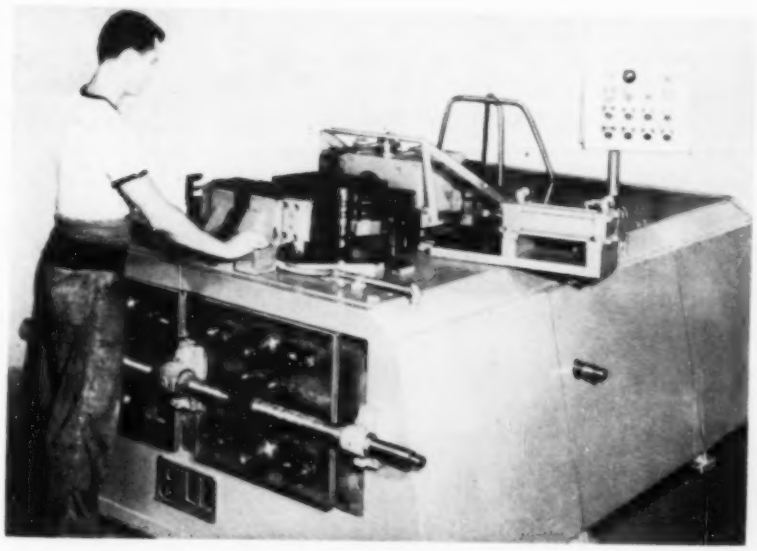
PIPE STRAIGHTENER—*Sutton Engineering Co, First National Bank Bldg, Pittsburgh 22, Penna.* Model 2JM Special operates at speeds up to 1000 fpm and faster, and is designed to handle continuous-weld pipe of ½ to 2-in. diameter. Unit incorporates Sutton 5-roll principle; rolls are positioned for horizontal pass line. Another model, the 2JM Modified, is available for pipe from ½ to 4-in. dia (Feb 25, p196).

BENDING MACHINE — *Husky Mfg & Tool Works Ltd, 5870 Yonge St, Toronto, Ontario, Canada.* Husky Rotomatic is designed to bend small electrical contacts of intricate shape but can also be used for cutting and piercing operations up to 2 tons, and can be fitted with a variety of feed mechanisms. Outstanding feature is the inexpensive tooling required. Rotating bending action permits very brittle material to be bent, and is said to yield a much stronger bend than conventional dies (Aug 12, p168).



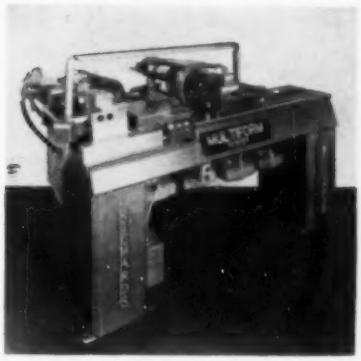
BENDING MACHINE—*Kilham Engineering Inc, Box 208 RFD, North Attleboro, Mass.* Model 410 Curvit is designed for bending tubing through ⅝-in. dia and steel rods through 5/16-in. dia, using minimum amount of air. Material is both clamped and formed by power; foot control operates entire clamping and bending sequence. Unit incorporates either 4-place turret stop or fast-operating adjustable stop (Apr 8, p170).

DUPLICATING BENDER — *Wallace Supplies Mfg Co, 1304 Diversey Pkwy, Chicago 14, Ill.* Operating on compressed air, tubing bender will duplicate any bend from a templet. After tube has been bent to requirement of templet, subsequent tubes are bent without need for checking each individual bend. Interchangeable head assemblies suit different size tubing and bending radii. Unit was developed by Northrop Co (Mar 11, p190).



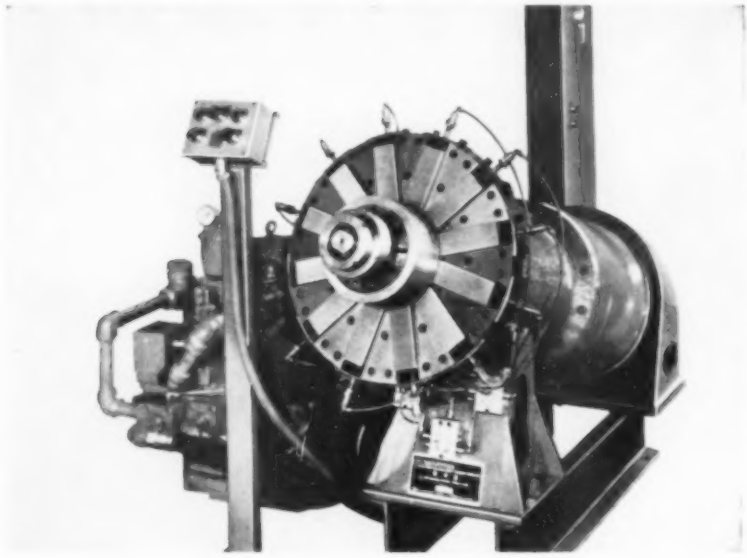
PUNCHPRESS-BENDER—*Walter P Hill, Inc, 22183 Telegraph Rd, Detroit 19, Mich.* Unit simultaneously pierces, flattens, coins, and produces multiple bends in two tubular parts at a net production rate of 1440 parts per hr. Hydraulically powered machine has interchangeable bending dies, and can be used as a horizontal punchpress, without bending, if desired (Oct 7, p174).

TUBING BENDER—*Leonard Precision Products Co, 9200 Bolsa Ave, Santa Ana, Calif.* Annealed ferrous and nonferrous tubing up to 6-in. OD and 20 ft in length can be bent in this 23-ft-long Model 76 Bendmaster. Max bend is 180°; max bend radius is 24 in. Machine performs entire preset bending cycle automatically in one electrically controlled operation. Each step can be performed individually if so desired (Dec 2, p162).



DOUBLE-END BENDER—*J A Richards Co, 905 N Pitcher St, Kalamazoo, Mich.* Multi-form Big Brother produces multi-angled channels in widths from 2 to 6 ft. Hydraulic machine is operated by a 10-hp motor, and has push-button controls. Automatic production cycle requires 15 sec (Mar 11, p186).

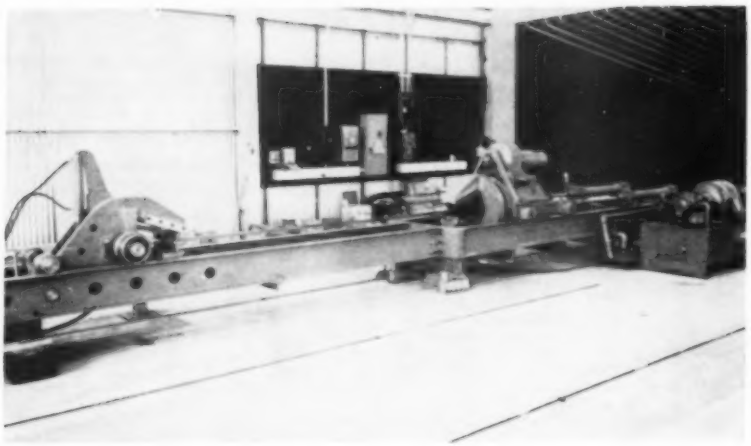
PORTABLE PIPE BENDERS — *Tal Bending Equipment Inc, 417 N Water St, Milwaukee 2, Wisc.* One-Shot benders bend 8-in. pipe, and larger sizes, up to 90° in one setting. Frame can be folded together for transportation. Attachment for making 180° bends is also available (Mar 11, p188).



EXPANDER — *Grotnes Machine Works, Inc, 5454 N Wolcott Ave, Chicago 40, Ill.* 15-H-215 expander has peak drawbar pull of 215 tons at max hydraulic system pressure of 3000 psi. New line will have capacities ranging from 60 to 1450-tons drawbar pull. Principal application of machines is in forming and sizing of cylindrical, conical, and polygonal sheet metal and tubular parts. Accuracy up to 0.004 in. TIR (May 6, p178).

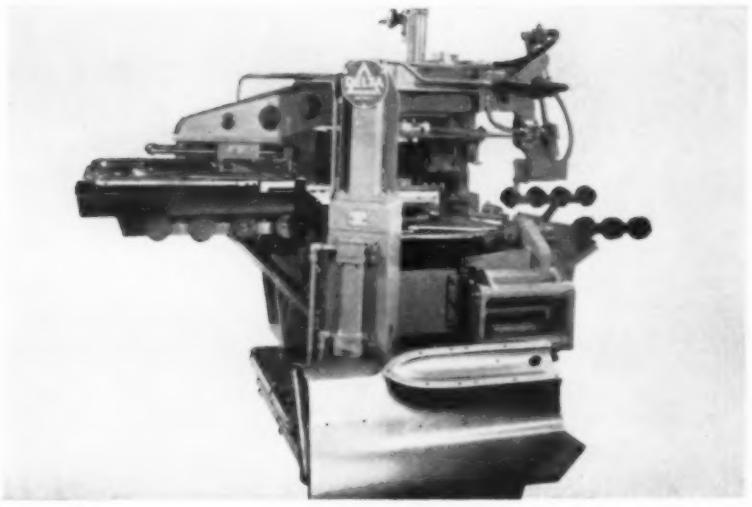
PRESS BENDING MACHINE—*Walter P Hill, Inc, 22183 Telegraph Rd, Detroit 19, Mich.* Horizontal hydraulic-powered machine is built for producing bent ferrous or non-ferrous tubular parts in which two or more bends of varying angles must be in accurate relationship. A 1000-psi hydraulic system, powered by a 30-hp motor and 40-gpm pump, operates unit (May 6, p209).

CLUTCH-BRAKE — *F J Litell Machine Co, 4127 N Ravenswood Ave, Chicago 13, Ill.* Warner electric clutch-brake is available as optional equipment on Series 308 straightening machines. Attached to lower pinch-roll shaft, device permits machine to operate as automatic feeding unit, supplying stock to a punchpress or shear using a die with positive stop (Aug 12, p164).



STRETCH-STRAIGHTENER—*Sutton Engineering Co, First National Bank Bldg, Pittsburgh 22, Penna.* Aluminum alloy extrusions are stretch-straightened on 25-ton machine which can handle any structural shape with max cross-sectional dimension of 8 in. Headstock can be turned for removing twist while extruded section is being stretched (May 6, p184).

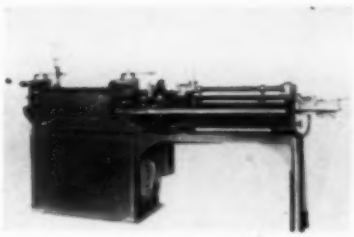
PLATE BENDING ROLL—*Webb Corp, PO Box 549, 402 E Broadway, Webb City, Mo.* Model R3L-R is built in a range of capacities and sizes from 4 to 10 ft long, for material from gage sizes up to 5/16 in. thick. Regardless of the thickness of the plate, the driving gears are always in mesh (Dec 2, p166).



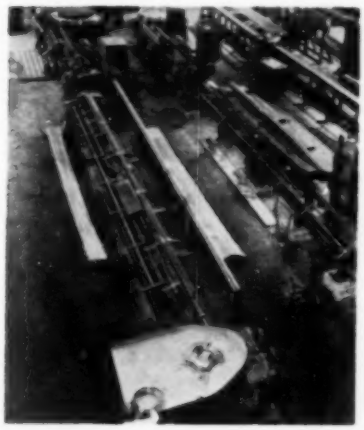
HYDRAULIC STRETCHER — *Lake Erie Machinery Corp, 507 Woodward Ave, Buffalo, NY.* Machine straightens and detwists extrusions ranging from 5 to 50 ft in length. Stretch stroke is 6 ft. Hydraulic system operates at 2550 psi with take-up speed of 520 ipm, stretching speed of 141 ipm, return speed of 885 ipm. Four-way jaws allow quick centering (Sep 9, p192).

CRIMPING MACHINE—*Delta Welder Corp, 8525 Livernois Ave, Detroit 4, Mich.* Machine crimps auto doors, hoods, deck lids or any part, not necessarily automotive, requiring a hem die and press. Known as the Delta Hemmer, machine has a capacity in excess of 700 doors per hr. Complete hemming is done in two operations. After the dies retract, the completed door ascends to the shuttle position where it is ejected. It can be adapted to hem any shape (Dec 2, p164).

WIRE STRAIGHTENING AND CUTTING MACHINES — *Mettler Machine Tool, Inc, New Haven 11, Conn.* Models 3AV and 4AV are completely electrified, and include variable speed transmissions, solenoid clutch control, and Warner electric brake on clutch shaft. 3AV, capacity from ¼ to ½-in. wire, feeds up to 220 fpm; 4AV, ⅜ to 11/16-in. wire, feeds 90 to 180 fpm (Jul 15, p188).

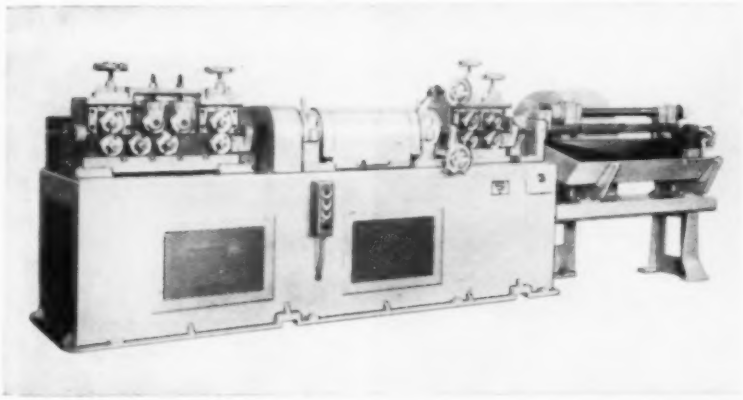


WIRE STRAIGHTENER-CUTTER—*Geo C Patterson Machine Co, 3409 Trumbull St, Cleveland 15, Ohio.* Model 12A Transit-Cut Hi-Speed automatic machine, reported to be the first completely synchronized flying-shear-type wire straightening and cutting machine, straightens and cuts to length wire from 16 gage to ¼-in. dia on the run, thereby eliminating any marking or swelling of the wire (Oct 21, p203).



TUBE PROCESSING LINE — *Loma Machine Mfg Co, Inc, 114 E 32 St, New York 16, NY.* Line is composed of uncoiler, drawbench, roll straightener, flying cutoff, automatic discharge conveyor, and a recoiler. This line, at Chase Brass & Copper Co, Cleveland, Ohio, handles ½ to ¾ in.-OD copper tubing at an output rate of 200 fpm (Oct 21, p201).

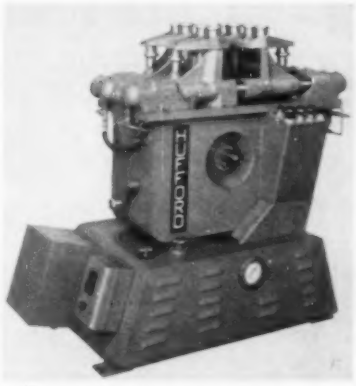
PNEUMATIC CRIMPER—*Pneumatic Devices Inc, Whitehall, NY.* Airlox, designed primarily to crimp solderless electric terminals, also lends itself to staking applications and some types of press operations. Jaw stroke is adjustable from 0 to ½ in.; squeeze developed is 50 times air line pressure; over-all dimensions, 12 in. high, 8½ in. wide and 11 in. long (Jun 3, p168).



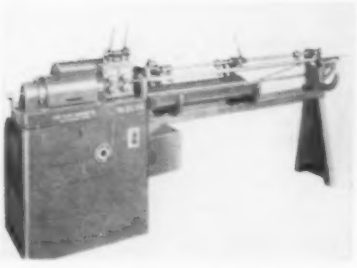
PIPE JOINER—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Set of specially designed steel offset rolls and a gage, available for both hand and power models of Niagara combination rotary machines, reportedly effect a 50% reduction in time required for joining round, heavy gage elbows and pipe sections (Aug 26, p168).

SPRING COILING MACHINE — *Sleeper & Hartley, Inc, Worcester, Mass.* Universal spring coiler, escapement type—Series 721, features more accurate feed control and wider range of feeds than former models. Wire feed does not vary with increase in speed. Design eliminates all stopping, starting, and reciprocating motions in the feed mechanism (Aug 26, p166).

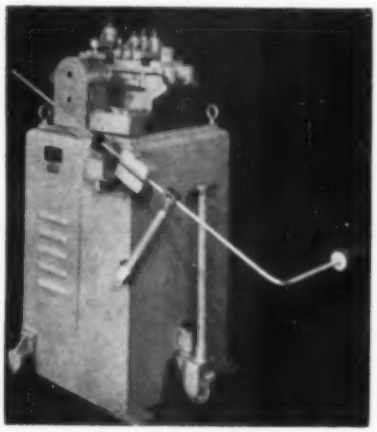
ELECTRO-MAGNETIC PRESS—*McCauley Industrial Corp, 1840 Howell Ave, Dayton 7, Ohio.* Press designed for punching, drawing, bending, riveting, cutting, or stamping is powered by electro-magnet. Stroke adjustment permits choice of single stroke operations or of multiple stroke operation over range of 10 to 200 strokes per min. Force can be adjusted from 600 to 7000 lb (Jul 15, p186).



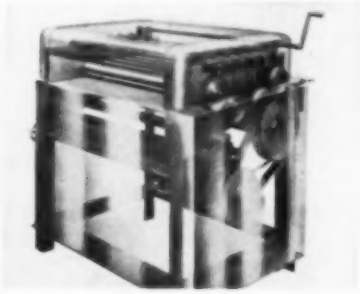
JOGGLER — *Hufford Corp, 700 E Grand Ave, El Segundo, Calif.* Machine can apply an adjustable-length stroke in any desired direction around a full circle in a vertical plane. Machine is built in two symmetrical halves. One half is stationary, the other slidable. An internal hydraulic ram forces slidable half of machine in any desired direction. Max stroke length is ½ in. Load capacity is 18,000 lb (Dec 30, p133).



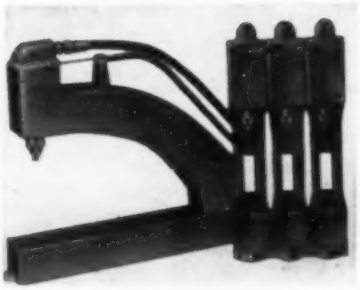
WIRE STRAIGHTENER-CUTTER—*Lewis Machine Co, 3441 East 76 St, Cleveland 27, Ohio.* New 2CV4 features a dual-center straightener arbor which increases the range of the machine. Machine has a capacity of 1/16 to ¼-in. dia wire. Also available is the model 4FH, which features traveling cutoff (Oct 21, p202).



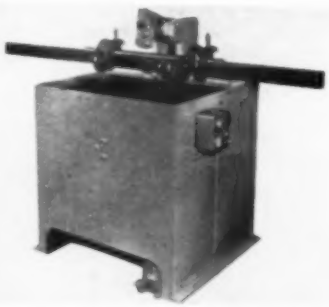
STRAIGHTENER—*U S Tool Co, Inc, Ampere (East Orange), NJ.* Model PDS 4½ straightener handles material up to 4½ in. wide by ⅛ in. thick, has pair of power-driven take-in rolls and 6 straightening rolls. Variable-speed drive of ½ hp runs the unit (Feb. 11, p180).



STRAIGHTENING MACHINE — *Benchmaster Mfg Co, 1835 W Rosecrans, Gardena, Calif.* Straightener has 11 rolls instead of the usual 9, specially adapting it to soft materials as well as supplying additional straightening capacity for steel. It has pinch rolls at both ends. Machine handles stock in thicknesses from 0.010 to 0.200 in. depending upon width; max width is 48 in. Constant and variable speed models available (Aug 26, p156).



IMPACT HAMMER — *High Speed Hammer Co, Rochester 21, NY.* Airchamp, which can be used for staking, swaging, stamping, cutting, marking and punching, can be set up for multi-stage operation on 2¼-in. centers. As many as ten units can be operated off a ½-hp air compressor, consuming 1½ cfm, each delivering 50 spm. Hammer has a 2-in. stroke, ram height clearance of 5-in. and a 10-in. throat. It sells for $89.50 (Oct 21, p220).



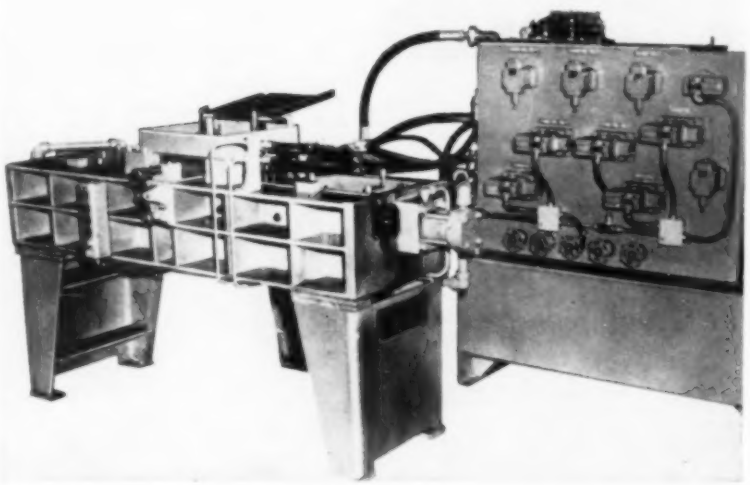
SPRING COILER—*Carlson Co, 3457 Weidner Ave, Oceanside, LI, NY.* Hand-operated unit is designed to produce accurate compression, extension and torsion springs from music wire, stainless, Inconel, phosphor bronze, and all other types of spring materials. Model coils 300 to 400 springs per hour using 1/64 to 5/32-in. dia. wire, from 3/16 to 2-in. OD, with lengths from ¼ to 10 in. (Nov 4, p203).

STRAIGHTENER — *Cooper Weymouth, Inc, 600 Honeyspot Rd, Stratford, Conn.* Straightener is designed to straighten small stampings that have become distorted during processings. Six-in.-stock-width model will flatten parts as thin as 0.010 and as short as 2 in. to within 0.001 to 0.002 in. in most cases. The 8 and 12-in. models will flatten parts as short as 3-in. The 17 straightening rolls and two feed rolls are power driven (Aug 12, p164).

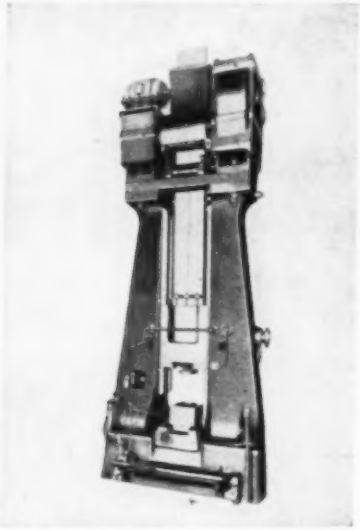
STRAIGHTENING PRESS—*General Mfg Co, 6438 Farnsworth Ave, Detroit 11, Mich.* New air or hydraulic, desk-type production presses for precision straightening, assembling, cold riveting are available in 10 and 20-ton sizes. Parts to be straightened are held in manual or air-operated centers or rollers while indicators show amount of distortion or deflection necessary (Aug 12, p163).

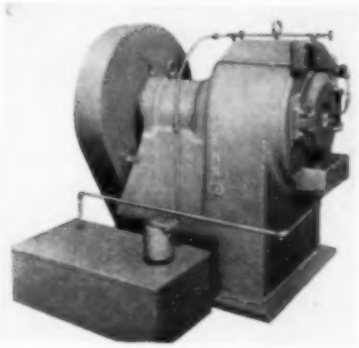
TUBE-BENDING PRESS—*Pines Engineering Co, 601 Walnut St, Aurora, Ill.* Vertical ram-type unit can make two bends in each of two or more tubes and can bend two different angles in same U frame. Model 6-T, with self-contained hydraulic system, has capacity of 6 tons. Press handles up to 1-in.-OD steel tubing, produces 1700 to 3000 bends per hour (Feb 11, p172).

TUBE FORMING MACHINE—*Vaill Engineering Co, 137 E Main St, Waterbury 20, Conn.* Series 700 Automatic is hydraulically operated. Tube is transferred from gravity magazine to work position, clamped, formed, and ejected automatically. Unit can be arranged for double operation work through use of double-stroking work slides, with indexing of forming tools between each stroke. Production rates up to 1500 pieces per hr (Aug 12, p170).



SPIN-FORGE MACHINE — *Hufford Corp, 1700 E Grand Ave, El Segundo, Calif.* Machine, called Spin-Forge, combines the features of a vertical spinning lathe with a process for forging the wall thickness of sheet parts, reducing the wall thickness from a full inch to as little as a few thousandths. Force for spinning and forging is applied by two hydraulically-actuated opposed rollers (Oct 7, p164).

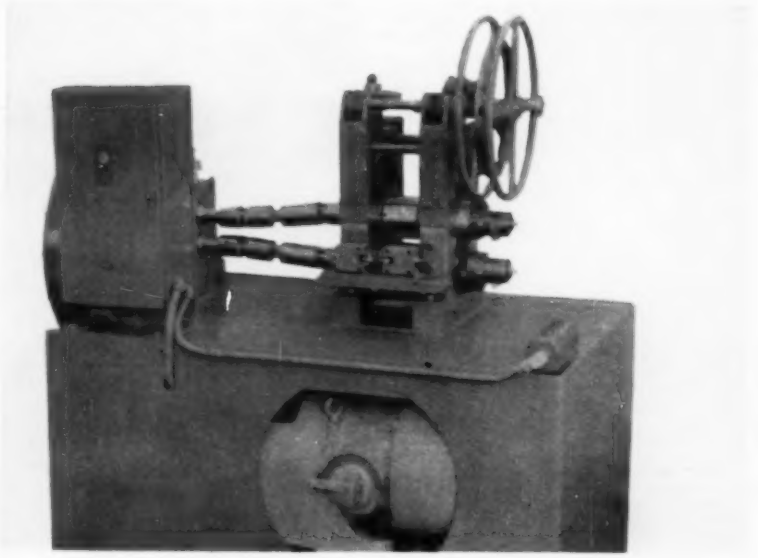




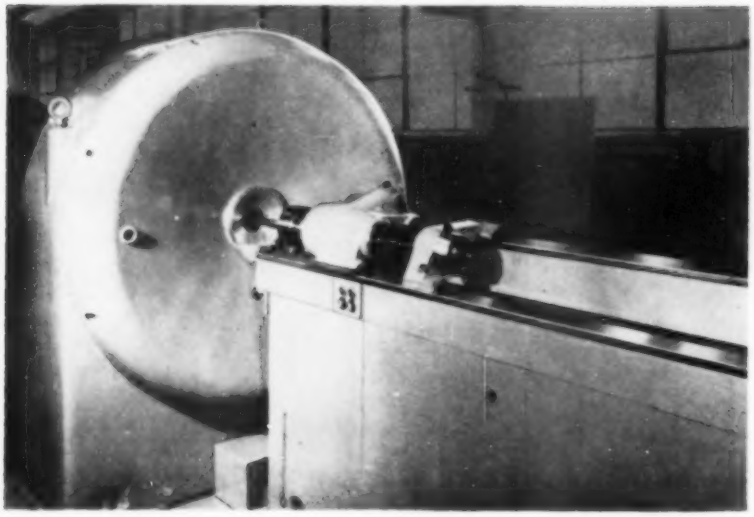
DIMPLING MACHINE—*Lemert Engineering Co, Inc, 201 East Jefferson St, Plymouth, Mich.* Airflex Model C-125 handles not only softer alloys but 17-7 PH and 15-7 Mo stainless steels as well as vanadium and manganese alloys of titanium. Machine uses high-frequency impact plus spinning to form metal. Machine has 24-in. throat; throat has 4⅞-in.-max gap and a clearance, die to die, of 2-15/16 in. (May 20, p206).

DROP FORGING HAMMERS—*Jersey Mfg Co, 407 Livingston St, Elizabeth, NJ.* Jemco line of drop forging hammers consists of both belt-lifting and board-lifting types with tup weights from 88 to 4410 lb and capacities from 286 to 29,040 lb-ft. Automatic cycle control feature allows operator to set unit for a predetermined series of blows at different heights (Aug 26, p156).

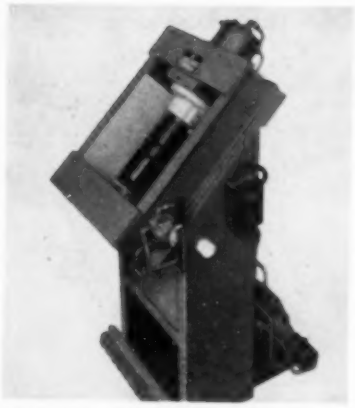
SWAGING MACHINE—*Fenn Mfg Co, Newington, Conn.* Model **4½ F** simplifies the production of long tapered tubular products, such as tubular furniture legs. It will produce tapers up to 15-in. long on tubing up to 2¼-in. dia in a single pass at a rate up to 6 per min. This includes welded and seamless tubing of ferrous and nonferrous metals. Work leaves machine with a fine finish (Oct 21, p222).



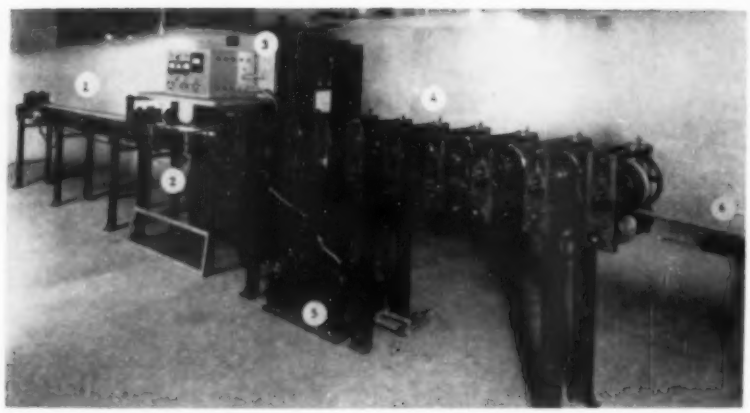
ROLLING MILL—*Fenn Mfg Co, Newington, Conn.* Special wire sections are rolled on Model 042 rolling mill which can roll non-ferrous wire at speeds up to 750 fpm with a max separating force of 40,000 to 60,000 lb. Two-high, pinion-gear-drive mill is used at United Wire & Supply Corp, Providence, RI, to flatten non-ferrous wire. Oversize bed contains vari-speed motor, oil sump, coolant tank (Jun 3, p164).



◀ COLD-FORMING MACHINE—*Fellows Gear Shaper Co, Springfield, Vt.* Machine, using licensed Appel cold-forming process, transforms original shape of unworked material into desired shape by action of forging elements which, under control, increase uniform circumferential pressures on outside surface of work with each stroke. Mandrel is used for producing internal contour. The number of strokes, feed, and rotation of work are variable (Jun 17, p186).



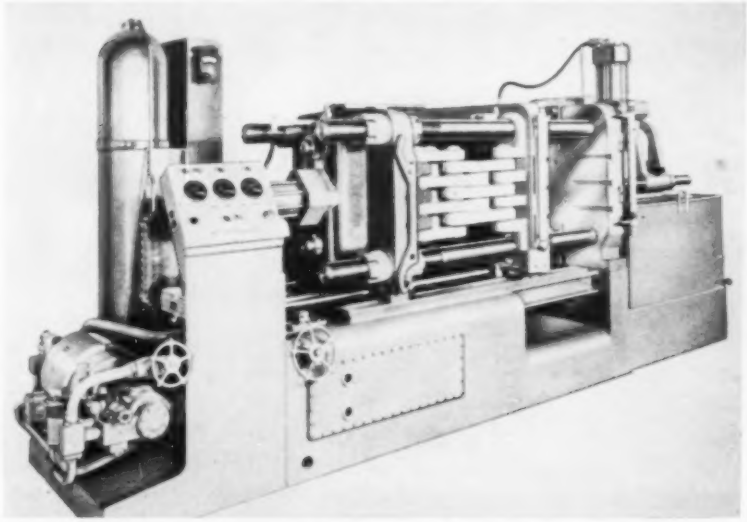
SWAGING MACHINE—*Weatherhead Co, Ft Wayne, Ind.* Machine is now available with swaging unit positioned at 45° angle. It is available in two standard models: WH 51 HMD high speed for 110/220-v, 60-cps, single-phase operation; and WH 53 HMD high speed, for 220/440-v, 60-cps, 3-phase operation. Either model can be adapted for any other power circuit at slight additional cost (Oct 7, p198).

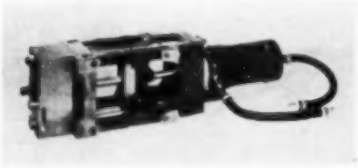


▲ ANGLE FORMER — *Faratron, 4447 Union Pacific Ave, Los Angeles 23, Calif.* Formica angles are rolled from flat strip at rate of approx 20 fpm on high-frequency machine built for Douglas Aircraft Corp. Strips are heated to approx 300 F. Bending radius is 3/32 in. on 1/16-in. material, with practically no spring-back (Apr 8, p178).

▶ HYDRAULIC FORGING MANIPULATOR—*Distributed by Kurt Orban Co, Inc, Industrial Equipment Div, Greenwich, Conn.* German unit is built in standard sizes, ranging from carrying capacity of 5500 to 220,000 lb. Pressure pumps deliver water to accumulator at 1420 psi. From accumulator, pressure water is supplied to control center which, in turn, supplies pressure water as required to working cylinders (Aug 12, p174).

DIE CASTING MACHINE — *Unit Products, Div of Uniloy Corp, Saline, Mich.* Unicaster Model 120 has 450-ton capacity and features hydraulic system mounted on sub-base of unit, accessible oil filters, easily-removed tie bars, and simplified shot-end design. Electrical control permits switchover from automatic cycling to manual operation (Mar 25, p206).

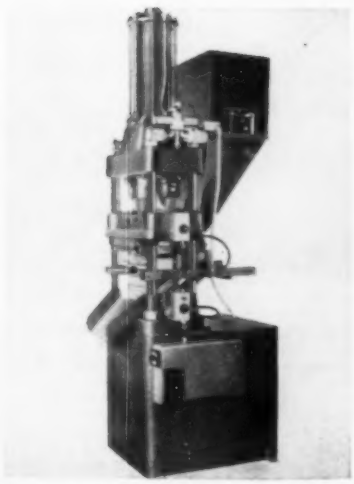




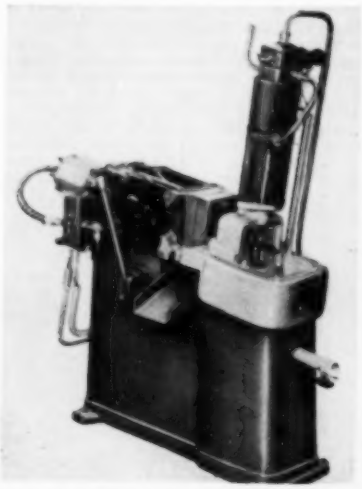
TOGGLE MECHANISM—*Imported by British Industries Corp, Dept PR-13, DCMT Div, Port Washington, NY.* Unit is designed for small high-speed DCMT die-casting machines and is interchangeable with all existing models. New features include massive air cylinder, stronger and larger ejector box, heavier-duty toggle links, and die block bushing supports (Feb 25, p198).

DIE-CASTING MACHINE — *British Industries Corp, Port Washington, LI, NY.* British-made DCMT Ram automatic die-casting machine will produce zinc-alloy castings from 1 oz to 1 lb in weight at production rates exceeding 1500 shots per hr. Machine features automatic cycling. Die opening is 5½ in.; die locking pressure is 60 tons. The 15 x 11½-in. platen takes all existing DCMT die blocks (Oct 21, p204).

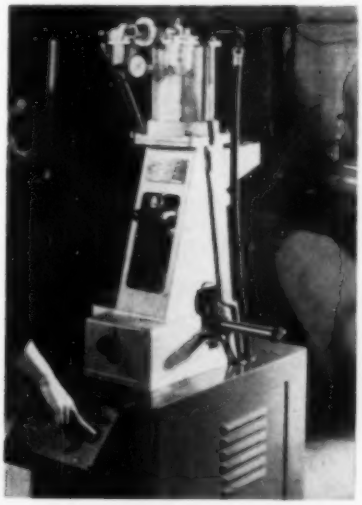
CASTING IMPREGNATOR — *Ideal Industries, Inc, Imprex Div, 2025 South 60th St, Milwaukee, 19, Wis.* Low-pressure, vacuum-type unit, features new design that eliminates sharp corners inside tanks, allowing sealants to agitate without loss of solids into square corners. Vacuum pump is capable of producing 29-in. Hg in 4 min. Impregnator has floor area of 12 x 4 ft, operates on ac or dc, 115, 230, 450, or 560v (May 20, p196).



COMPRESSION MOLDING PRESS—*Automatic Molding Machine Co, 3217 Exposition Pl, Los Angeles 18, Calif.* Automold A50-B produces 50 tons pressure on reduced air-line pressure of 100 psi. Press will produce 60 tons on pressure of 120 psi. Press has toggle system for increased stability (Mar 11, p192).



DIE-CASTING MACHINE — *British Machines & Foundry Supplies, Ltd, Dept PR-21, Port Washington, NY.* DCMT IMP/96 has max shot capacity of 1 lb; it can cycle continuously for lengthy periods at free cycling speeds up to 3000 shots per hr. Machine is designed in units so that any part may be rapidly removed and replaced. DCMT system of prefabricated die blocks is used (May 20, p200).

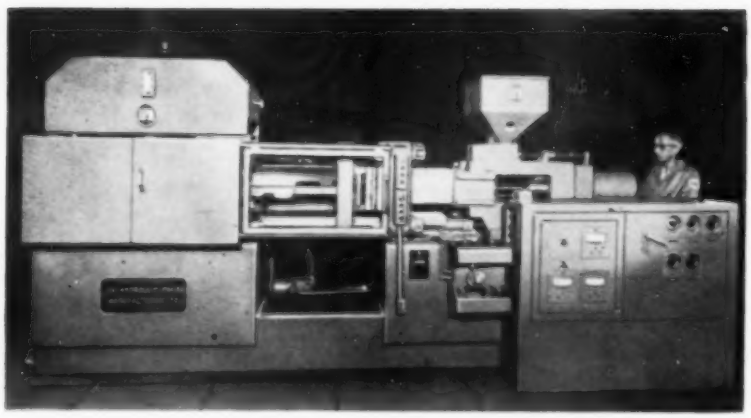


INJECTION MOLDING MACHINE—*Newbury Industries, Inc, Newbury, Ohio.* Model 50 "air-Jet" Wasp is designed for intricate, small plastic molding over metal inserts. Unit will mold all thermoplastics, including nylon. Max pressure is 30,000 psi. This pushbutton model features a V-type mold with interchangeable cavity cell (Oct 21, p218).

PLASTIC MOLDER — *British Machines & Foundry Supplies Ltd, 80 Shore Rd, Port Washington, NY.* British portable injection-molding machines, Asmidar APM 21, is hand-operated unit which can work all thermoplastics including nylon. Machine is fitted with semi-automatic hopper feed and a leakproof, self-sealing, interchangeable cylinder unit. Injection pressure is 5700 psi. Dimensions: 18 by 8 by 12 in. deep (Mar 25, p196).

◀ INJECTION MOLDING MACHINE—*Fellows Gear Shaper Co, Springfield, Vt.* No. 12-350 machine is designed to mold wide variety of plastic products in intermediate size range of 12 to 20 oz. Machine dry cycles at 700 per hr and handles mold bases up to 20 x 31½ in. with a 14-in. draw. It is equally capable of producing either deep-draw, thin-wall parts or heavier sections (Jul 29, p141).

DEEP POLYETHYLENE PARTS — *Hydraulic Press Mfg Co, Div of Koehring Co, Mt Gilead, Ohio.* H-P-M 48/64-oz plastics injection molding machine features 54-in. mold-clamp stroke and 84-in. daylight; injection speed of 2410 cu in. of material per min. 20¼-in. wastebasket is typical product; but machine will also handle average molding jobs (Apr 22, p186).



PLASTIC FORMER—*Quick Plastics, 1705 Cooper St, Jackson, Mich.* Sheet is taken directly from extruder and, while still warm and soft, passed over vacuum roll where it is formed in desired pattern. Styrene, polyethylene, acetate, and butyrate are being formed by method. Present equipment makes sheets 24 in. wide in continuous lengths, in thicknesses from 0.008 to 0.080 in. (Jul 1, p150).

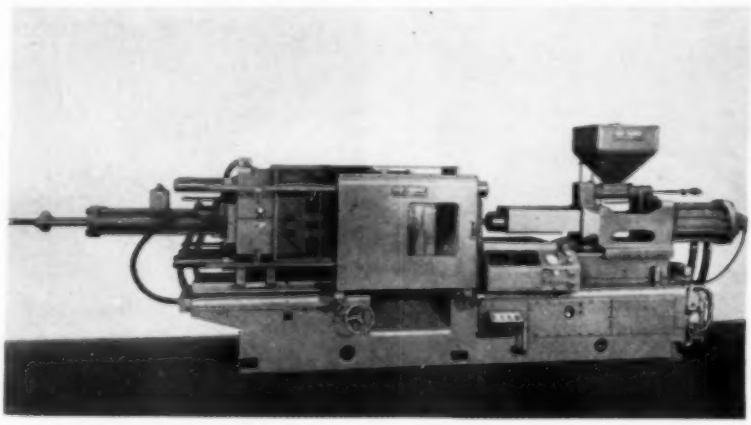
◀ INJECTION MOLDING MACHINE—*Koehring Co, Hydraulic Press Mfg Co, Div, Mount Gilead, Ohio.* Model 200-H-6/8 plastics injection molding machine is claimed to be fastest machine of its size (6-8 oz) on market today. At full clamp stroke with max tonnage, speeds up to 720 cycles per hr are possible. Machine has a 30-hp motor and features a full hydraulic clamp with 15-in. stroke and 25-in. daylight (Oct 7, p170).

PLASTIC VACUUM FORMER— *Product Packaging Engineering, 5747 Marilyn Ave, Culver City, Calif.* Model 40-A Pak-O-Vac is automatic, has two work stations to allow loading and unloading without interrupting production. Vacuum forming, drape forming, blister and skin packaging can be done on unit, which is approx 12 ft long and 3½ ft wide (Jan 14, p164).

MOLDING PRESS—*Automatic Molding Machine Co, 3201 Exposition Pl, Los Angeles 18, Calif.* Automite A-10, with manual, semi-automatic, and fully automatic controls uses air supply as source of power, with normal working air pressure of 80 to 100 psi. Ram moves into position on low pressure and booster steps up pressure to 20,000 ram pressure at any desired location within the 6-in. stroke of the ram (Dec 2, p154).

COMPRESSION MOLDING PRESS— *F J Stokes Corp, 5500 Tabor Rd, Philadelphia 20, Penna.* Redesigned Model 741 fully-automatic compression molding presses in capacities of 50, 75, 125, and 200 tons have many features including fast closing time (2.9 sec from feed to die contact) plus fast pressing speeds (up to 27 ipm) which permit mold to be run hotter, shorten curing time, and allow max use of new fast-curing resins (Jun 3, p154).

INJECTION MOLDER—*Newbury Industries, Newbury, Ohio.* Mini-Jector units incorporate small, lowcost, parting-line sprued molds of 1/3 to 1-oz capacity. Prices start at $875 (¾-oz); mold blanks at $37.50. Machine will mold any thermoplastic including nylon; up to 30,000 psi possible with hydraulically operated model. Air or hydraulic power models are available with lever or pushbutton controls (Jun 17, p198).



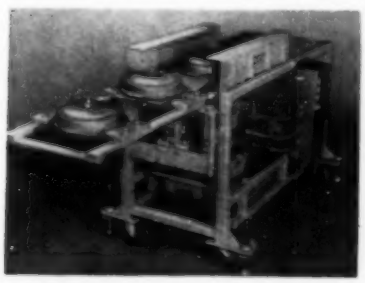
▶ INJECTION MOLDER — *Reed-Prentice Corp, Worcester 4, Mass.* Designed for molding of deep-draw plastic products in the 12 to 16-oz range, new 300TL machine offers an adjustable mold clamping stroke from 8 to 20 in. Dry cycle time of this long-stroke model is 12 seconds. Mold platens measure 29 x 32½ in. Space between the 4-in.-dia tiebars is 15 x 20½ in. Max mold size is 29 x 20½ in. (Jul 1, p142).

SHEET FEEDER—*Hautau Engineering Co, 721 Wanda, Detroit 20, Mich.* Unit processes blanks successively, from loaded stack, through oiling rolls, and then through press. It also feeds scrap out of press. Feeder is positioned on rails permitting full access to press for die removal, and is hydraulically powered by two motor-driven pumps (May 6, p186).

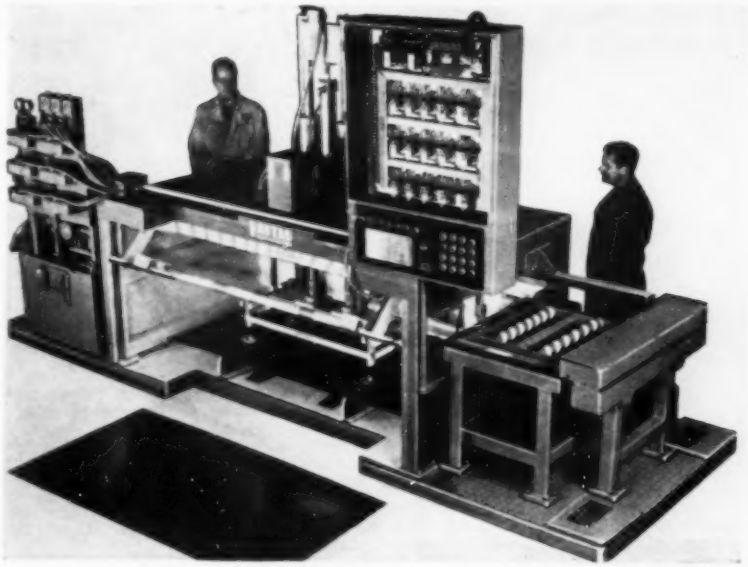
PRESS FEED—*McKay Machine Co, 285 W Federal St, Youngstown, Ohio.* Feed line is a mechanically controlled, automatic unit consisting of coil holder, decoiling unit, feeder unit, and optional scrap shear. Line is applicable to both progressive die operation and straight blanking, is electrically synchronized with press, and handles stock 0.125 in. thick by 60 in. wide and feed lengths up to 60 ft (May 20, p193).

ROLL FEEDS — *Ferguson Machine Corp of Indiana, Roller Gear Div, Box 5841, St Louis 21, Mo.* Standard high-speed roll feeds are indexed with a roller gear drive to provide repetitive accuracy at rate up to 1000 strokes per min. Units have strokes from 1 in. or less to 10 in., and rolls up to 12 in. wide. Feed time of either 180° or 270° may be chosen with from 2 to 16 stops per revolution of rolls (Sep 23, p194).

PUNCHPRESS FEED—*H E Dickerman Mfg Co, 321 Albany St, Springfield, Mass.* Rol-Di-Feed is a self-contained, cam-driven feed that can be mounted to feed in any direction for any type of die—piercing, blanking, compound, progressive, or draw. Unit permits stock feeds of up to 12 in. per cycle (Jul 15, p185).



FEEDER — *Press Automation Systems, Inc, 25418 Ryan Rd, Centerline, Mich.* Lift-and-carry type combination transfer feeding and unloader unit can be used to load and unload one press or it can be placed on a line of presses with a continuous transfer bar to provide a completely automated transfer line. Unit occupies a floor space about 3 x 8 ft and is about 42 in. high (Dec 16, p180).



PRESS FEED — *Press Automation Systems, Inc, 25418 Ryan Rd, Centerline, Mich.* Portable automatic unit for feeding heavy flat strip stock to presses can be adapted to either single-operation or progressive dies. Feed stroke is adjustable to meet variety of applications. Feeder is about 6 ft high and 3 ft wide. Length depends upon length of strip stock to be handled (Dec 16, p172).

PRESS FEED—*Sesco, Inc, 8881 Central Ave, Detroit 4, Mich.* Sesco-Matic, for handling highly polished stock, consists of a stock lubricator, hydraulic feed, and a precision cutoff device. Cutoff is sequenced with feed cycle and is actuated at completion of forward stroke or during return stroke of feed grippers (Jan 14, p170).

SAFETY DEVICES—*Clearing Machine Corp, 6499 W 65th St, Chicago 5, Ill.* Saf-Strok control is designed to prevent press from repeating. Key device is limit switch, set so that 5 to 10° crankshaft overtravel will actuate switch and stop press. Actual stopping of press is accomplished through solenoid valves (Jan 14, p162).

ROLLER CHANNELS—*Magni-Power Co, Wooster, Ohio.* Magnetic units expedite shearing of light and medium-weight sheet steel up to 14 gage. As sheet is fed through shear, magnetic rollers seize and guide it into position against back gage. Roller channel assemblies come in lengths of 24, 36, or 48 in. (May 20, p230).

PUNCHPRESS TRANSFER MACHINE — *Automation Development Corp, 135 Reynolds Rd, Mentor, Ohio.* Unit removes, transfers, and loads parts from one work station to another. Tooling can also include turnover devices. Standard models have adjustable stroke 42 in. long and 8 in. high. Longer strokes available on request (Jun 3, p166).

MALFUNCTION DETECTOR—*Almy, Hayden & Maxwell, Inc, 8 Anderson St, Marblehead, Mass.* Electronic device, known as the Ex-Po-Det Model TC-2-20, is an excess power detector which follows accurately the normal work load on the electric drive motor to which it is connected. Feed and material irregularities, such as double sheets or ejection failures, are instantly detected and machine is shut down automatically (Dec 2, p162).

SAFETY DEVICE—*Searjeant Metal Products Inc, Box 42, Mendon, NY.* Safety control designed for press brakes and shears consists of three parts: light projector, photo-cell receiver or pick-up, and amplifier. If the light ray, which passes between punch and die, is broken the safety device will stop machine (Sep 23, p192).

ELECTRONIC CONTROLS — *Sensory Inc, 504-14 Pleasantville Rd, New Vernon, NJ.* Package control unit, designated Sensory Shear Director, has electronic touch sensors and photocells combining to control the shear for insuring correct dimensions, straight sides, and square corners. Unit is 20 in. high, 16 in. wide and 6 in. deep (Jun 17, p183).

GRIPPING MECHANISM—*Press Automation Systems, Inc, 25418 Ryan Rd, Centerline, Mich.* Vac-Hand can be mounted on company's standard straight-line press unloaders. It has rubber suction cup on end of adjustable rod. Unit operates on 45-psi line pressure. Adjustable rod is pivot-mounted and is advanced and retracted by air cylinder control (Jul 15, p196).

CLUTCH—*Benchmaster Mfg Co, 1835 W Rosecrans, Gardena, Calif.* Clutch with oversize sliding-key-type clutch dog encased by steel collar which removes driving load from crankshaft keyway is now standard equipment on 2-ton Benchmaster punchpresses (Mar 25, p232).

STACKING CHUTES—*Clark Industries, Delaware, Ohio.* New line of stacking chutes is designed to carry and stack stampings up to 20 ft away from the presses. No limitations exist on the maximum thickness or size of the stamping. Chutes are mounted onto die shoe of press bolster and are adaptable to OBI presses, high production presses and dieing machines. Max load capacity is 5000 lb (Nov 4, p192).

PRESS UNLOADER—*Press Automation Systems, Inc, 2518 Ryan Rd, Centerline, Mich.* Extra-large stampings are handled on Dual-Jaw automatic unloader which has two standard mechanical jaw assemblies mounted on individual carriages. Carriages are advanced and retracted by a reversible air motor through a roller chain drive. Jaw assemblies swivel in any plane for universal adjustment (Dec 2, p136).

PORTABLE TRANSFER UNIT—*Sheffield Corp, Dayton 1, Ohio.* Press Pacer converts any standard press into an automated press capable of handling a number of progressive operations and a broader range of sizes. Portable unit bolts to bed of press, is completely mechanical, adjustable for different spacings between dies, for different ram strokes, and can be installed to run either front to back or left to right (Feb 25, p192).

PRESS CONTROL—*Wintriss, Inc, 20 Vandam St, New York 13, NY.* Circuit Master, Mark II, is an electronic-mechanical control system composed of a sensing assembly consisting of compensating contactor mounted on stationary part of machine, and a bumper mounted on movable part. Mechanism senses slightest mechanical overload, is self-adjusting and wear compensating, and is unaffected by normal temperature changes (May 20, p191).

UNLOADER CONTROL—*Sahlin Engineering Co, Inc, P O Box 289, Birmingham, Mich.* Electronic remote control permits operators to adjust Iron Hand unloaders by turning calibrated dials. Adjustments possible include main cylinder speed control, delay between gripping and lifting jaw release, arm stroke and over-travel, arm return-stroke delay, independent arm or jaw operation, and cycling independent of press (Jun 3, p156).

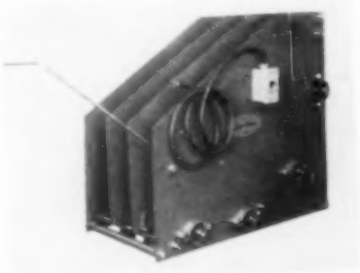
ELECTRIC CLUTCH—*Benchmaster Mfg Co, 1835 W Rosecrans Ave, Gardena, Calif.* Fully electric clutch permits any number of presses to be tripped to synchronize in any desired pattern, although operating completely independent of one another. No mechanical connection exists between presses. Individual timing impulses to each press can be supplied by cam, tape, electronically or by other means (May 5, p175).

PRESS ACCESSORY — *O'Neil-Irwin Mfg Co, 512 8th Ave, Lake City, Mich.* Let-Up Control fits all hydraulically operated Di-Acro press brakes and is said to eliminate whipping and resultant kinking of sheet material. Long sheets can be handled because the speed of the ram can be reduced by as much as 50% just prior to the time that the die in the ram makes contact with the material (Aug 12, p172).

CLUTCH KEY SPRING—*Sales Service Machine Tool Co, Press-Rite Division, 2363 University Ave, St Paul 14, Minn.* Device has been installed on No. 00 two-ton Press-Rite presses. Outside bridle-type device is said to increase tension, permitting faster engagement and improved spring life (Jun 3, p177).

INCHING CONTROL—*Carp Controls Co, 30 Meadow St, South Norwalk, Conn.* Electro-magnetic control, designated Positive Incher, provides control of ram during setup or tool and die checking operations. Unit connects to motor circuit of power presses, brakes, or shears. Operator presets exact max distance ram can travel with each successive pressing of starting or jogging button (Sep 9, p190).

PRESS CONTROL—*Clark Controller Co, 1150 E 162nd St, Cleveland, Ohio.* Anti-repeat press control called Transmag, for use with Clark Type PV protector air valves, has no moving parts. Instead of relays, device utilizes magnetic amplifiers, diodes, a transistor, and a pulse transformer. Unit operates on 115-v ac power (Dec 16, p190).



COIL CRADLE—*Durant Tool Supply Co, 1-15 Thurbers Ave, Providence 5, RI.* Model 1010 features three power-driven rolls plus two idling rolls to give complete support to coils of all diameters. In addition, unit has two centralizing plates so that material is always in direct line with power press and roll feed (Jul 15, p196).

COIL CRADLE—*Automatic Feed Co, PO Box 391, Napoleon, Ohio.* Cone-type coil cradle and straightener accepts coils from 10 to 60 in. wide (can be made up to 90 in.) by 66-in.-max OD, and is arranged with cylinder for roll loading and lift cylinder for centering coils to cones. Machines are available for 20,000-lb to 50,000-lb coils (Jun 3, p162).

COIL CRADLE—*Medelton Co, 335 E 142nd St, Bronx 54, NY.* Poweroll cradle handles stock to 24 in. wide by 48-in. dia, and up to 3000-lb weight. Coil is simply rolled onto it, without need for crane or hoist. Unit feeds press automatically (Apr 22, p205).

PNEUMATIC DIE CUSHION—*Dayton Rogers Mfg Co, Minneapolis 7, Minn.* Model RD is easily attached to any inclinable press within its capacity. Improved unit requires drilling and tapping of only one hole, either in bolster plate or die shoe, for installation. Device is made in six sizes, from 2 to 6 in., with draw-ring holding pressure from 400 lb to 1 ton (Jul 29, p152).

COIL CRADLE-STRAIGHTENER — *East U S Tool Co, Inc, Ampere (East Orange), NJ.* Model PDSC-1648 is suitable for material up to 16 in. wide, coils up to 48-in. OD. Cradle has four power-driven rest rolls, one idler rest roll, and one bumper roll. Straightener has eight straightening rolls and two power-driven take-in rolls. Unit has loop control mechanism, and 3-hp motor for speeds from 26 to 76 fpm (Sep 9, p219).

SCRAP CHOPPER — *Jaco Devices, Inc, 90 High St, Hingham, Mass.* Heavy-duty 12-in. scrap chopper will cut steel 12 in. wide and up to ½-in.-thick solid cross-section. Unit is powered by press ram, independent of die. It fits any punchpress and handles any coiled ribbon stock. Blades can be removed quickly for grinding; easy installation of spare blades practically eliminates downtime (Oct 7, p166).

SCRAP CHOPPER — *Cooper Weymouth, Inc, 600 Honeyspot Rd, Stratford, Conn.* Unit features orbital shearing action which allows equal opening at each end of cutting blades, permitting free entrance of material through blades. Stock too thick simply stalls the unit without danger of breakage of any parts or motor. Unit has a capacity of 6 in.-wide x 0.065-in. thick mild steel (Apr 8, p186).

SCRAP CHOPPER—*Durant Tool Supply Co, 136 S Water St, Providence 3, RI.* Operated by press ram, chopper features replaceable blades. Model M1 handles material up to 3 in. wide and up to 0.062 in. thick; Model M2, material 10 in. wide and 0.100 in. thick; Model M4, material 12 in. wide and 0.100 in. thick (Jun 3, p166).

SCRAP CHOPPER — *Jaco Devices, Inc, 90 High St, Hingham, Mass.* Unit driven by punchpress ram can handle steel up to 12 in. wide and 3/32 in. thick. Device fits any punchpress and handles coiled ribbon stock. Blades are quickly removable for re-grinding (Feb 25, p200).

SCRAP CHOPPERS — *Durant Tool Supply Co, 1-15 Thurbers Ave, Providence 5, RI.* Models 100, 200, and 300 are available with heavier-duty bearings, better lubricating systems, and improved steel in blades (Apr 8, p199).

BASE PLATES—*Jaco Devices, Inc, 90 High St, Hingham, Mass.* Base plates for company's scrap choppers elevate choppers to stock line level of larger die sets in punchpresses. They provide for 2¼-in. common stock line, and come in three sizes for the three sizes of choppers, 3, 6 and 12 in. (Apr 8, p209).

CRADLE-STRAIGHTENER — *Benchmaster Mfg Co, 1835 W Rosecrans Ave, Gardena, Calif.* Koil Kradle has rated capacity of 4000 lb, accommodates coils up to 60 in. in dia and 18 in. wide. Max stock thickness handled is 0.045 in. Unit automatically supplies controlled slack loop of straight, flat stock without the use of intermediate feeding device. Variable-speed, 2-hp motor drive feeds stock at rates from 20 to 100 sfpm (Apr 22, p198).

AIR CUSHION—*Dayton Rogers Mfg Co, 2824 13th Ave S, Minneapolis 7, Minn.* Universal Model DX pneumatic air cushion for punchpresses comes in eight sizes, developing ring holding pressure of 1 to 20 tons on standard shop air lines. Unit comes with all necessary high pressure hose fittings, including combination reducing-regulating valve and pressure gage (Mar 25, p206).

INCLINING DEVICE—*Niagara Machine & Tool Works, 683 Northland Ave, Buffalo 11, NY.* Device for presswork requiring frequent die changes is available as optional equipment on Niagara OBI presses, Series E, A, and AA (45- to 200-ton models). Air motor drives inclining nut through high-ratio worm gear to move press frame up or down (Feb 11, p161).

PUSH-PULLER—*Owatonna Tool Co, 383 Cedar St, Owatonna, Minn.* Push-puller can be changed from 2-leg unit to 3-leg by altering position of legs in puller head. Legs are available in different lengths to vary reach (Oct 7, p189).

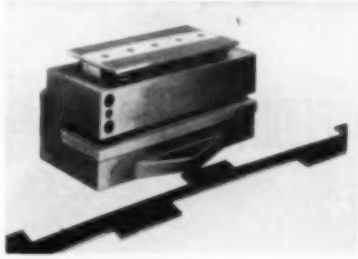
JAW ASSEMBLY—*Press Automation Systems, Inc, 18616 Wyoming Ave, Detroit 21, Mich.* Unit fits air-powered straight-line or swinging-arm-type press unloader and unloads stampings having vertical flange at point of pick-up. Heavy-duty air cylinder opens and closes jaw. Model 715 has 7-in. stroke, 1½-in-dia cylinder; Model 820, 8-in. stroke, 2-in-dia cylinder. Both have 1¼-in. jaw opening (Feb 25, p214).

POWER KIT—*General Automation Corp, 100 West End Ave, New York, NY.* Trippit power kit for foot-operated shears consists of completely enclosed, electric foot pedal; plug-in outlet for electric counter which can be combined with preset counter to stop machine after any desired quantity; and compression cylinders. Completely wired kit sells for under $200 (Jun 17, p229).

DIE HANDLING MACHINE — *E W Bliss Co, Canton Ohio.* Using this machine operator can assemble or disassemble large die sets in a few minutes. Built in sizes to accommodate all sizes of die sets, the machine described handles sets weighing up to 7000 lb and as large as 24 x 66 in. (Nov 18 p208).

MAGNETIC SHEET FANNERS — *Eriez Mfg Co, Erie 6, Penna.* Devices are available in four strengths designed to operate with max efficiency on materials from thin or small sheets (light duty) through large and heavier sheets (heavy duty). Each of the four sheet strengths is available in units 6, 9, and 12 in. high (Nov 18, p192).

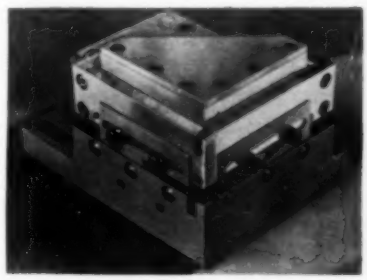
PORTABLE HYDRAULIC CUTTER —*Manco Mfg Co, Bradley, Ill.* Dolly mounting makes for a completely portable unit, including motor, pump, oil reservoir, and cutting head suspended on a spring tension balancer. Guillotine cutter has clearance for 42-in.-dia coils; cutting heads have capacities of ½ and 1¼ in. (Aug 12, p172).



EDGE-NOTCHING PUNCHES — *Punch Products Corp, 3800 Highland Ave, Niagara Falls, NY.* Unipunch edge-notching units, Series A, with 8¾-in. shut height and 3½-in. die height, are designed and built for setups on templets, T-slotted plates and rails in presses and press brakes. Units have built in stripping springs and two pilot pins, and are available for notches from 1½ x 1 in. to 3 x 8 in. in material as heavy as ¼-in.-thick mild steel (Sep 23, p198).

PUNCHING UNIT — *Toolset, Inc, 1411 Military Rd, Buffalo 17, NY.* Designed for use in press brakes, punchpresses and arbor presses, this self-aligned unit is capable of piercing 0.093 to 0.3116-in.-dia holes in mild steel as heavy as ⅛ in. thick. It is available with either a 6¼ or 7½-in. shut height and has a 3½-in. die height (Dec 30, p130).

HOLE PUNCHING UNIT—*Punch Products Corp, 3800 Highland Ave, Niagara Falls, NY.* Unipunch Series G units have no parts attached to press ram. Punch and die are held in Meehanite holder; interchangeable die buttons fit into die adapter. Punch has shut height of 7½ in., 3¾-in. die height for holes up to 0.3125 in. dia in mild steel up to ⅛ in. thick. Throat depth is 3 in. (Feb 25, p210).



NOTCHING UNIT — *Wales-Strippit Co, Akron, Ohio.* New NA ¾-in. 90° corner notching unit features removable, reversible punch and die blades. Punch and die blades are each in two segments which can be interchanged, reversed, turned end-for-end and top-to-bottom to present eight cutting edges before regrinding is necessary. Units are made in 3 x 3 and 5 x 5-in. sizes, RH or LH, and have capacity of ⅛-in. mild steel (Dec 16, p170).

DIE SET PULLERS—*Durant Tool Supply Co, 136 S Water St, Providence, RI.* Shur-Pull pullers are available in three sizes: No. 1 comes with 1-, 1¼- or 1½-in. pin; No. 2, with 1¾- or 2-in. pin; and No. 3, with a 2¼-in. pin. Prices are $18, $22, and $30, respectively (Apr 22, p202).

PUNCH BLANKS—*Dayton Perforators, Inc, Dept 15, 1336 Stanley Ave, Dayton 4, Ohio.* Five each of 30 different sizes are made of A2 tool steel, R_c 60-62, and can be altered to any shape without loss of hardness. Blanks come in 21 x 5½ x 6-in. wooden case, and are supplied in three assortments —basic, heavy-duty, and close-spacing (Jun 17, p206).

SPECIAL RETAINER PLATES — *Acme Industrial Products, Inc, PO Box 468, Royal Oak, Mich.* Plates for close mounting of interchangeable punches and die buttons incorporate a ball lock feature for quick insertion and release of each punch or die button. They can be mounted on standard dies in presses or brakes or used in progressive die designs (Sep 23, p198).

DIE SPRINGS—*Producto Machine Co, 990 Housatonic Ave, Bridgeport 1, Conn.* Assortment No. 40 consists of 40 different wire sizes in 8 spring diameters ranging from 3/32 to ½ in. Springs are 10 in. long with open ends (Mar 25, p220).

PERFORATING UNIT—*Punch Products Corp, 3800 Highland Ave, Niagara Falls, NY.* Unipunch Series B-5 punches round and shaped holes up to 3½-in. dia in mild steel up to ⅛ in. thick. 5-in.-wide holder is lightweight aluminum-alloy casting with steel insert in guide hole to minimize wear and assure concentricity. Units are available with 8, 12, and 16-in. throat depth (Jun 17, p229).

PRESS DIE CLAMP—*Clearing Machine Corp, Div of US Industries, Inc, 6499 W 65 St, Chicago 38, Ill.* Clamp for mounting punch dies to press slides attaches to press slide, reduces die mounting time to seconds. Clamps are available in 10 to 15-ton capacities: minimum of four clamps recommended for each slide. Tightening sequence is rapid and extremely simple (Nov 4, p194).

REST BUTTONS — *Jergens Tool Specialty Co, 712 East 163 St, Cleveland 10, Ohio.* Alloy-steel buttons, hardened to R_c 58-60, are offered in two types and a complete range of sizes. Buttons with shanks are made in 16 sizes; buttons with drilled and counterbored hole for sockethead screw are made in 18 sizes (May 20, p228).

DIE STOP—*Keystone Engineering & Mfg Co, 122 S W 16 St, Des Moines, Iowa.* Keystone Primary has prehardened tip and is so simple to install that apprentice can handle job. No precision holes have to be drilled in accurate locations; actuating spring serves as a retainer for movement in both directions (Aug 12, p184).

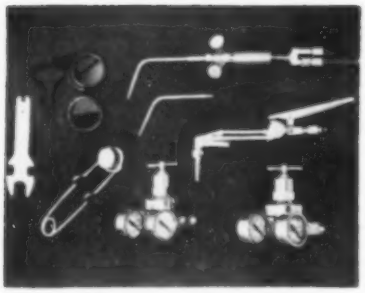
DIE-SET POST—*Standard Die Set Manufacturers, Inc, 1505 Elmwood Ave, Providence 7, RI.* McVey post features ground taper lead which automatically guides die-set punch-holder into correct mounting position. Special land of same diameter as post provides pivot plane for punchholder bushing, assuring quick alignment and long wear. Available for both 2- and 4-post die sets (Jan 14, p178).

American Machinist

1958

PRODUCTION PREVIEW

WELDING AND ASSEMBLY



WELDING AND CUTTING OUTFIT —*Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Welding, brazing, heating, and cutting outfit will weld metals up to 3/16 in. thick, or up to 5/16 in. if larger tips are used, and cut steel plate up to 1 in. thick. Outfit consists of two Style 8000 single-stage regulators, twin 3/16-in. gas hoses, Style 400 lightweight torch with mixer and two tips, Style 1490 cutting attachment with one tip, wrench, lighter and goggles (Jul 1, p136).

CUTTING BLOWPIPE—*Linde Co, Div of Union Carbide Corp, 30 E 42 St, New York 17, NY.* Oxweld C-63 is reported to have the largest capacity of its kind. Ample preheat is provided for cutting thicknesses as great as 55 in. in single pass. Separate preheat oxygen-line supply gives stable preheat flames unaffected by operation of cutting oxygen valve (Jan 14, p165).

PORTABLE WELDING OUTFIT — *Westinghouse Electric Corp, Arc Welding Dept, Pittsburgh, Penna.* Designed for inert gas welding of aluminum and other metals, this 4-lb portable handgun handles filler wire down to 0.020 in. Two models are available: one for filler wire of 0.020 to 3/64-in. dia; other is for wire of 3/64 to 1/16-in. dia. Travel speeds for horizontal fillets average 22 ipm with 1/16-in. filler wire (Nov 18, p198).

CUTTING ATTACHMENT—*Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Airco 1490 attaches to company's Style 400 lightweight welding torch. Unit weighs 13 oz, measures 9½ in. in length, and has cutting range up to 1-in.-thick steel. Diaphragm-type cutting oxygen valve eliminates need for valve packing and prevents gas leakage (Jul 1, p138).

OXWELD NOZZLES—*Linde Co, Div of Union Carbide Corp, 30 E 42 St, New York 17, NY.* Each of the 2-piece nozzles has from 12 to 20 extremely small outlets for preheat gases. This increases rate of heat transfer and produces nearly solid ring of preheat flames. Gases usually leave a cutting nozzle at about 980 fps, but design of new nozzles boosts this to 1200 fps (Aug 12, p164).

WELDING BLOWPIPE—*Linde Co, Div of Union Carbide Corp, 30 E 42nd St, New York 17, NY.* Oxweld W-47 blowpipe is medium-pressure welding blowpipe capable of welding any metal thickness from 28 gage to 3 in. and handling heating jobs requiring total gas flows up to 1500 cfh. A convenient cutting attachment equips the blowpipe for flame-cutting on metal up to 8 in. thick (Nov 4, p184).

GAS-OXY HAND TORCH—*Bethlehem Apparatus Co, Inc, Hellertown, Penna.* Hand torch called Insto-Change features three interchangeable tips; tip can be changed by squeezing handles, and can be tilted freely at any angle. Torch burns gas at ordinary city pressure, will burn manufactured or natural gas as well as other gases. Tool is 13½ in. long, weighs 10 oz (Mar 11, p180).

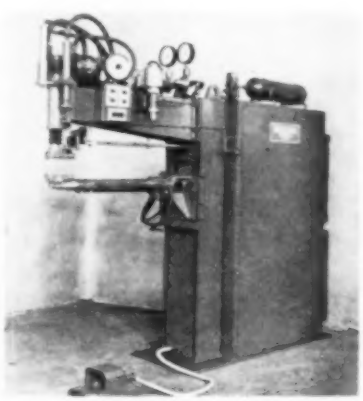
TORCH HEAD—*Air Reduction Sales Co, Div of Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Angular machine-torch adapter is adjustable through range of 250°. Cutting head can be set without tools, and without removing the accessory from torch. Device accommodates standard Airco acetylene, propane, and natural-gas tips, and is designed for the Airco Style 4700 machine cutting torch (Dec 2, p150).

TORCH—*Smith Welding Equipment Corp, 2633 Fourth St, SE, Minneapolis 14, Minn.* Air-acetylene torch contained in Handi-Heat soldering torch kit can be used for soldering, light brazing, leading, thawing, and similar jobs. Complete units with preset regulator are available to fit commercial tanks and styles B, POL, and MC tanks (Dec 16, p194).

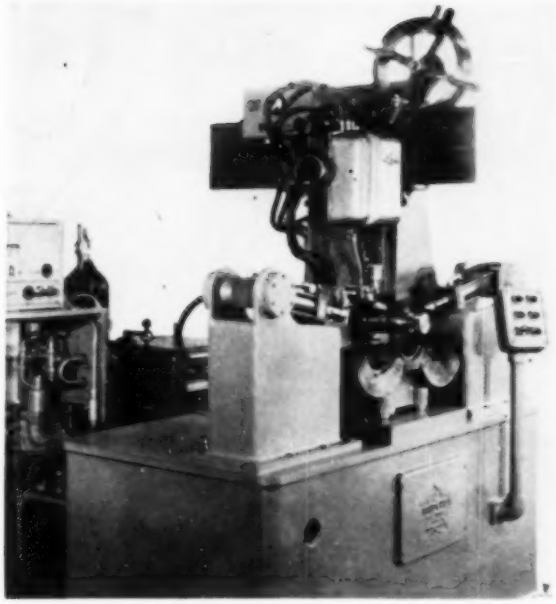
CUTTING TORCH — *Air Reduction Sales Co, Div of Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Accessory for use in making simultaneous parallel cuts with one Airco Style 4700 machine cutting torch is called the Duplex Tip Holder, and may be set to cut strips of any width from 1¼ to 12 in., in plate thicknesses up to 3 in. Device, which replaces company's line of fixed duplex holders, accepts acetylene, propane or natural-gas tips (Dec 16, p180).

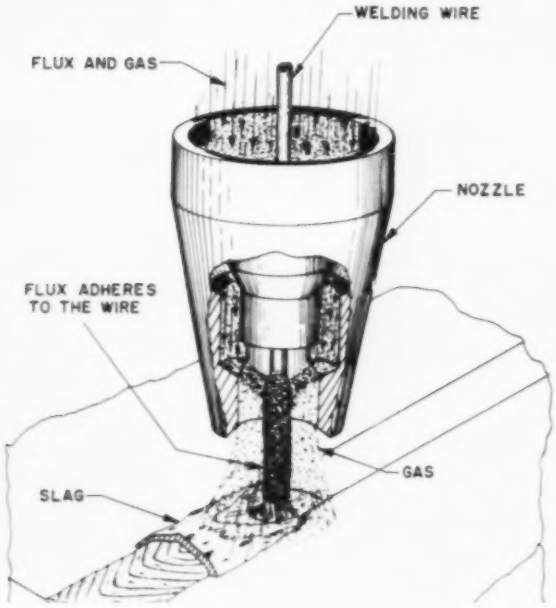
WELDER ATTACHMENT — *Lincoln Electric Co, Cleveland 17, Ohio.* Power Pack attaches to company's 500-amp ac-dc Idealarc welder, and is designed to permit use of the welder as a power source for the manual Lincolnweld ML-2 semi-automatic submerged arc welder. Units mount directly on Idealarc welder (Aug 26, p156).

STUD WELDING GUN—*Gregory Industries, Inc, Nelson Stud Welding Div, Lorain, Ohio.* Nelson NS-10 stud welding gun weighs less than 4 lb and is 9 in. long. Gun will weld all studs up to ½-in. dia. It uses company's standard line of studs, ferrules and welding accessories. The NS-9 gun welds larger studs up to 1-in. diameter. Guns increase productivity and reduce operator fatigue (Oct 21, p212).



SEAM AND SPOT WELDER—*Sciaky Bros, Inc, Dept M-13, 4915 W 67th St, Chicago, Ill.* Model PMM-OC machine is air-operated, electric resistance unit capable of welding light-gage aluminum and other light alloys, stainless steel, titanium, and mild steel. Machine welds metals as thin as 0.002 in. and as thick as 0.016 in. System is designed for accurate control of the low electrode force required and for rapid follow-up (Feb 11, p160).





STATOR CORE WRAPPERS—*Standard-Modern Tool Co, Ltd, Toronto, Canada.* Core wrappers for fractional-hp motors are formed and welded on machine in 36 sec. Unit employs Linde Sigma-welding outfit. Jaws open at end of welding cycle and piece is ejected (Apr 8, p186).

WELD-CYCLE CONTROL—*Air Reduction Sales Co, Div of Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Control unit provides programmed control of all functions of machine Heliwelding. Weld time may be set for any duration within the range of from 1 sec to 2 min; other ranges up to 20 min are available. Separate timers determine crater fill duration (adjustable from 0.1 to 5.0 sec) and slope control (Dec 2, p152).

WELDING TORCH—*General Electric Co, Welding Dept, Schenectady, 5, NY.* Dry-type torch replaces standard water-cooled version for Fillerarc welding. Rated up to 800 amps, it is interchangeable in its attachment to automatic wire-feeder, and comes equipped with tips for handling wire from 0.045 to $\frac{1}{8}$ in. (Apr 22, p219).

WELDING GUN—*Guthery Machine Tool Corp, Aro Spot Welder Div, 38-31 Crescent St, Long Island City 1, NY.* Model 410 is a semi-automatic air-controlled welding gun designed for fast production runs. Gyroscopic suspension permits easy rotation through 360° in all directions, allowing welding in close quarters. Jaws are opened and closed by the pneumatic cylinder mounted on the back of the gun (Oct 21, p211).

SEAM WELDER—*Webb Corp, Webb City, Mo.* Series B longitudinal seam welder, designed to weld longitudinal seams on cylinders and flat sheets, can be used manually or automatically. All models handle work from 3 to 30 in. dia. Available in floor and bench-type models, unit comes in 3 sizes and three lengths, 18, 24 and 30 in. (Mar 11, p180).

WELDING UNITS—*Miller Electric Mfg Co, Inc, Appleton, Wis.* Models AEA-200 and AEA-200L produce 225 amp of continuous rated welding current. AEA-200-L can also provide 5 kw of 110/220 ac power for operation of lights or power tools (Apr 22, p198).

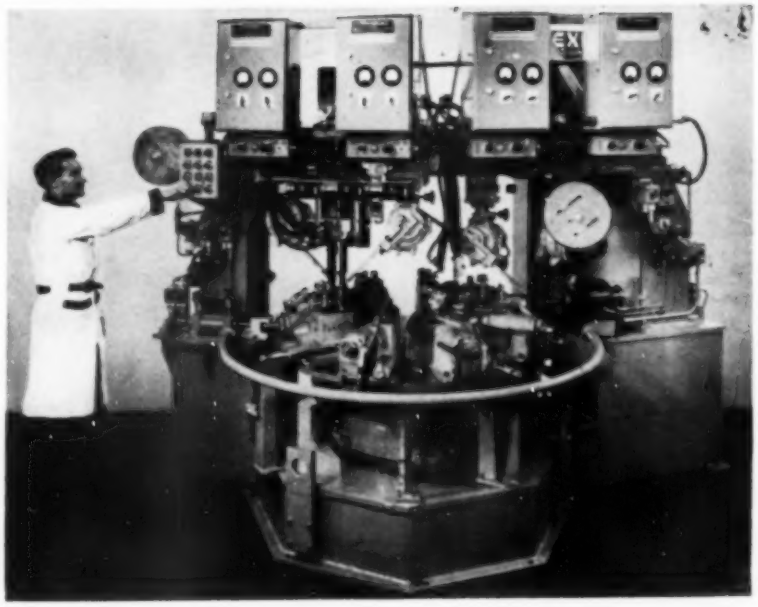
WELDING MACHINE VALVES—*Lincoln Electric Co, Cleveland 17, Ohio.* Stellite-faced rotating valves are standard equipment on Lincoln Electric's 180 and 250-amp welders. Wearing surfaces are faced with stellite and rotate 8° on every stroke of engine to insure even wearing (Jan 14, p192).

WELDING UNIT—*Hobart Bros Co, Troy, Ohio.* Semi-automatic welding unit for use in CO_2 and inert-gas metal-arc welding is designed for use with company's Powromatic constant-voltage welder, but will operate with any constant-voltage dc power source. It consists of welding control and electrode drive unit, with interconnecting gas, water, and cable assemblies (Apr 8, p178).

SEMI-AUTOMATIC ARC WELDING PROCESS—*Linde Co, Div of Union Carbide Corp, 30 E 42nd St, New York 17, NY.* Unionarc process uses continuously-fed bare wire electrode, powered magnetic flux, and CO_2 gas. Welding current sets up magnetic field which attracts flux to wire. High-quality welds are produced even where moderate rust, scale, and moisture are present, as well as when there are minor gaps (Mar 11, p176).

DC WELDER—*Miller Electric Mfg Co, Appleton, Wis.* Rectifier-type dc welder, designated Gold Star SR, features new transformer, weld stabilized current, and completely sealed semi-metallic rectifier. All of company's SR series welders—200, 300, 400, 600, and Duplex—will be available only in new Gold Star machines (Aug 26, p174).

AUTOMOTIVE ANCHOR PLATE ASSEMBLIES—*Expert Welding Machine Co, Div of Expert Die & Tool Co, Inc, 17144 Mt Elliott Ave, Detroit 12, Mich.* Automated 8-station rotary index CO_2 arc-welding machine positions and welds a plate and bushing together to produce 320 units per hr at 80% efficiency. Index table is driven by cam index mechanism and has eight two-stage fixtures (Mar 11, p178).



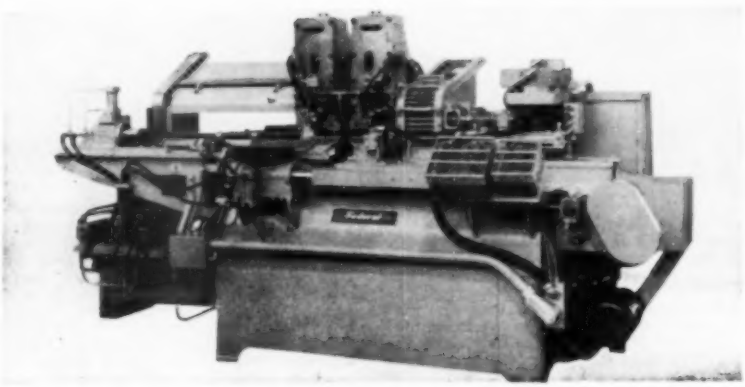
WELDER—*General Electric Co, Welding Dept, Schenectady 5, NY.* Atomic hydrogen welder has automatic hot start device that gives current surge for positive starting. In process, jet of hydrogen, directed across arc formed between pair of tungsten electrodes, turns to atomic hydrogen and then recombines at short distance from arc to form molecular hydrogen. Current range of unit is 7 to 100 amp (Feb. 25, p192).

MAGNESIUM WELDING—*Copperloy Corp, Lite-Line Metal Industries Div, 4105 Brookpark Rd, Cleveland 24, Ohio.* Continuous welding of magnesium, using shielded inert-arc, consumable-electrode process, has been successfully developed. New device eliminates "burn-backs", and company reports continuous welds up to 30 ft and welds on magnesium ranging from $\frac{1}{8}$ in. to heavy plate (Sep 9, p206).

WELDER—*Cayuga Machine & Fabricating Co, Inc, W Gould & Long Sts, Depew, NY.* Designed to handle No. 56 and 66 frames with a minimum of adjustment, motor-frame and core welder boosts electric-motor production by turning out 500 completed parts per hr. 4-station machine utilizes company's Cayuga-Matic indexing table, with controlled acceleration and deceleration and precision locating (Feb 11, p162).

WELDING GUN—*Tec Torch Co, Inc, 500 Paterson Ave, Carlstadt, NJ.* Tec Spot Gun uses tungsten inert-gas arc-welding principle. Gun has built-in welding timer for regulation of weld penetration without readjustment of power source. Welds are said to be comparable in strength to those made by conventional resistance-welding processes (Sep 9, p196).

DC WELDER—*Miller Electric Mfg Co, Inc, Appleton, Wis.* Model SR-10 is designed to bring advantages of tungsten inert-gas welding to those working with light-gage, hard-to-weld metals. Full 15-amp current assures prompt arc starting. Gas control valve and timer are available as extra equipment. Unit measures 14 x 22 x 15 in. and weighs 90 lb (Aug 26, p162).

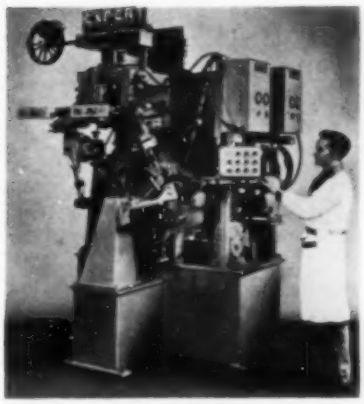


FLASH WELDER—*Federal Machine & Welder Co, Warren, Ohio.* Automated flash welder welds worms to ends of automotive steering gear shafts. Both parts are automatically fed from loading chutes, injected against a gage bar for correct weld position, and ejected after welding. Machine stops if part-loading chutes are empty (Nov 18, p200).

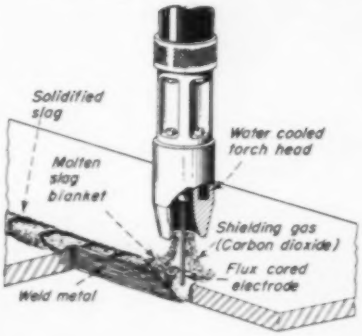
AC-DC WELDERS—*Lincoln Electric Co, Cleveland 17, Ohio.* Idealarc welders of 180 and 250-amp capacity are designed for job shops, sheet-metal shops, and light production and maintenance welding. Machines operate on single-phase, 230-v, ac input power. Units are also available as straight ac machines (Apr 22, p198).

WELDING MACHINE—*Expert Welding Machine Co, Div of Expert Die & Tool Co, Inc, 17144 Mt Elliott Ave, Detroit 12, Mich.* 5-station rotary index machine combines assembly and CO_2 shielded-arc welding operations. Machine press assembles and contour welds flat circular plates to inside of cylindrical parts at rate of 500 assemblies per hr (Mar 25, p192).

WELDER—*Sciaky Bros, Inc, Dept M-14, 4915 W 67th St, Chicago, Ill.* Furnace bonnet sections are horizontally seam welded on air-operated single-phase Model MX-400 resistance welder. Parts rest and rotate on horizontal adjustable table and are welded at rate of 144 ipm. Main transformer is rated at 400 kva (May 6, p190).



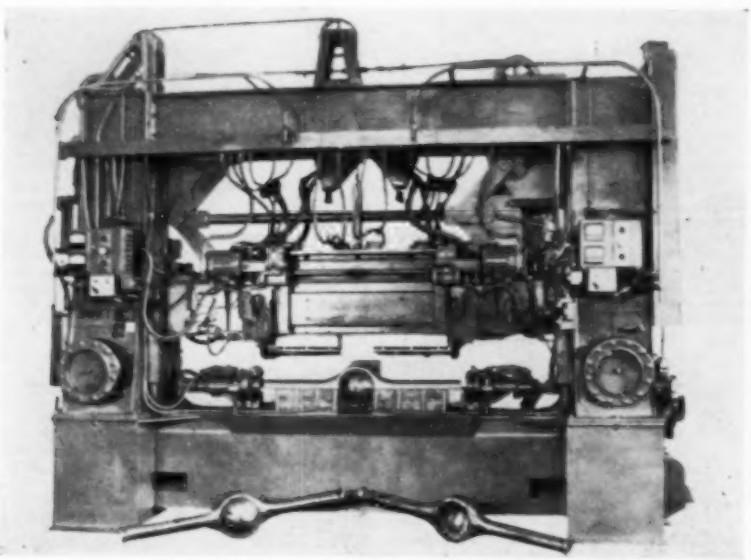
ARC WELDER—*Expert Welding Machine Co, Div of Expert Die & Tool Co, Inc, 17144 Mt Elliott Ave, Detroit 12, Mich.* 8-station trunnion-type welder features cam index mechanism and cam clamping mechanism for welding two automotive motor mount parts together at rate of 433 parts per hr. Machine welds by CO_2 shielded-arc method, is adaptable to other methods (Feb 25, p216).



WELDING PROCESS—*National Cylinder Gas Co, 480 N Michigan Ave, Chicago 11, Ill.* Dual Shield process combines flux-cored electrode and shielding gas to achieve lowcost welding of mild steel at a high rate of deposition and travel speed, with high penetration. Scaly, or rusty steel is cleaned as it is welded; the slag shield peels off as it cools (May 6, p175).

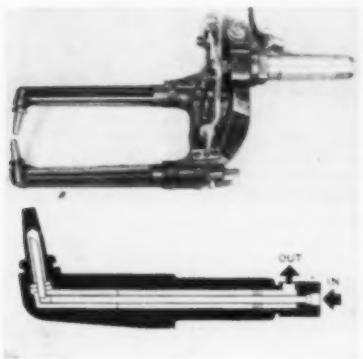
ARC WELDER—*Brennen, Bucci & Weber, 262 Mott St, New York 12, NY.* Model 200B has 200-amp output, weighs 80 lb. Unit welds steel 1½ in. thick, cuts steel ¼ in. thick. Dimensions are 12 x 13 x 14 in. (Apr 22, p186).

REDESIGNED CUTTING TORCH — *Arcair Co, 419 S Mt Pleasant St, Lancaster, Ohio.* Model H-3 torch, shorter and more compact, has rotating head and concentric cable. Improvements include heat and impact resistant plastic insulators; insulated pushbutton air valve that doesn't need to be held down; cable connection inside handle moves cable flexure away from connection; increased cable life (Apr 8, p174).



▲ AUTOMOTIVE REAR-AXLE HOUSING—*Swift-Ohio Corp, 8095 Livernois, Detroit, Mich.* Parts are welded on automatic submerged-arc welder which features simultaneous welding with 4 platen-mounted heads. Two stampings are clamped in machine. Upper platen, suspended from crown by toggle linkage, clamps housing halves during welding (Jan 14, p168).

WELDING UNIT—*Hobart Brothers Co, Troy, Ohio.* Semi-automatic submerged-arc welding unit, equipped with wire reel, caster-mounted base, carrying handles, and all controls, is designed for use with any arc welder having continuous current up to 500 amps, using solid 5/64 or 3/32-in. wires, and 3/32 or 7/64-in. tubular wires (Jul 1, p133).



WELDING GUNS — *Allied Welder Corp, 8700 Brandt, Dearborn, Mich.* Line of portable welding guns is reported to be so cool in operation that you can hold your hand on the jaw extension. Incoming water reaches welding point through a tube that is insulated by the return water jacket. New guns are available in a complete line including C-type and scissors type with either upper or lower jaw operation (Nov 18, p200).

WELDING CONTROLS — *General Electric Co, Schenectady 5, NY.* Line of non-synchronous resistance-welding control panels features unitized plug-in control units, hermetically sealed relays, and standardized enclosures with swing-out frames. Basic unit size is 4 in. wide by 8¼ in. high by 8 in. deep. Units vary in width from 4 to 12 in. (Feb 25, p214).

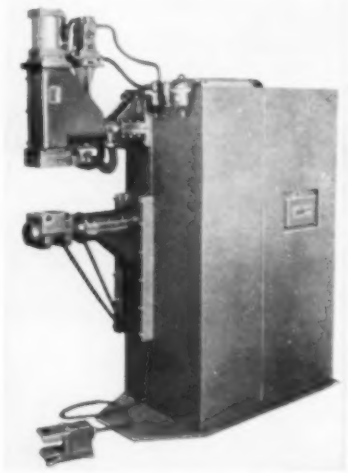
SPOT WELDER—*Guthery Machine Tool Corp, Aro Spot Welders Div, 38-81 Crescent St, Long Island City 1, NY.* Aro P-166A features extremely high current for its size, easy one-hand operation, adjustable spring pressure, and a built-in trip switch (Jul 15, p188).

AUTOMATIC WELDING HEAD — *Air Reduction Sales Co, Div of Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Model AMH-C Aircomatic machine head is specifically designed for heavier production applications of automatic machine welding. Aluminum wires of from 3/64 to ⅛ in., and hard wires from 0.045 to ⅛ in. can be fed at rates up to 600 ipm. Wire feed speed is fully adjustable (Dec 30, p128).

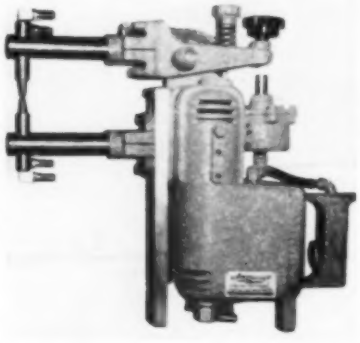
WELDER—*General Electric Co, Welding Dept, Schenectady 5, NY.* Designed primarily as power source for submerged-arc process, 1000-amp ac transformer welder has an operating range of 325 to 1000 amp. Single-phase unit has motor-driven current control. With output open-circuit voltages of 85 to 100 volts, unit has power-factor correction capacitors and operates on reconnectable 230/460-v input (Apr 8, p174).

STEERING COLUMNS—*Expert Automation Machine Co, Div of Expert Die & Tool Co, Inc, 17144 Mt Elliott Ave, Detroit 12, Mich.* Automotive units are machined, welded, assembled, and tested on 7-station in-line Weldmation processing machine. Unit assembles and welds flange to one end of steel tube, performs three machining operations on other end, and tests finished column assemblies at rate of 400 units per hr (Jun 17, p206).

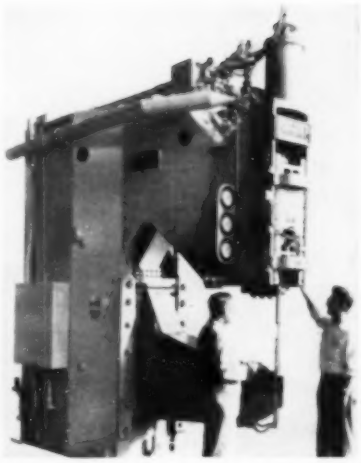
WELDING POWER SOURCES—*General Electric Co, Welding Dept, Schenectady 5, NY.* Two Fillerarc power sources, designed specifically for consumable-electrode gas-shielded welding, feature redesigned fan and baffled air ducts for reduced noise levels; complete phase insulation of motor stators for increased life. Both constant-arc-length and constant-voltage motor generators are rated 450 amps, 60 cycles (Aug 26, p176).



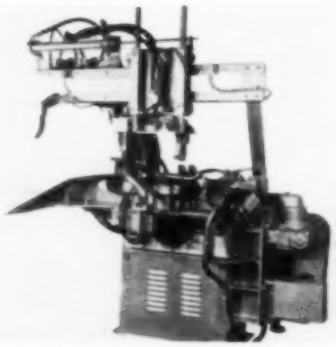
SPOT AND PROJECTION WELDER —*Allied Welder Corp, 8700 Brandt, Dearborn, Mich.* Roller-head press-type combination spot and projection welders are adjustable up to 30-in. throat depth. Units come in two sizes: 30, 50, and 75 kva with 1000 psi at 80-psi line pressure; and 75, 100, and 150 kva with 2300 psi at 80 psi. Both are water cooled, with open or closed circuits (Jul 15, p184).



RESISTANCE WELDER — *Ampower Products Co, Oak Lawn, Ill.* Model 57 resistance welder is water-cooled, air-powered, and constructed chiefly of aluminum alloy for light weight and portability. Provision has been made for bench mounting, or welder may be purchased with cabinet used as stand. Specifications: power, 200-240v, 50-60c single-phase; rating, 4.5 kva, 3-v open circuit secondary; throat dimensions, standard 6-in. throat by 1½-in. tip opening, throat adjustable to 18 in. (Apr 8, p173).



SPOT WELDER — *Federal Machine and Welder Co, Warren, Ohio.* Designed with throat area of about 2100 sq in., three-phase frequency converter spot welder is reportedly largest of type ever built. Transformer supplies 100,000-amp welding current. Welder is over 13½ ft high and weighs over 58,000 lb (Feb 11, p168).



TUBE WELDER — *Taylor-Winfield Corp, Warren, Ohio.* Ends of long curved tubes that form part of automobile exhaust crossover assembly are joined by special flash butt welder. Unit, rated at 75 kva, processes parts at rate of 240 per hr. Machine has pick-up and transfer mechanism for automatic unloading (Jun 17, p232).

WELDER—*Weldex, Inc, 18404 Weaver St, Detroit 28, Mich.* Two bench-type air-operated 5- and 10-kva spot or projection welders are designed for welding light and non-ferrous metals. They feature valve and speed controls mounted at cylinder, and ram bearing surface of 15 sq in. at full stroke. Cylinders are 2½ or 3 in. with 2-in. stroke (Mar 25, p190).

ELECTRIC-MOTOR CORES — *Automatic Methods, Inc, 802 W Grand St, Elizabeth, NJ.* Cores are welded on machine consisting of standard dc welder and a separate enclosure that houses torch, indexing table, and automatic and regulatory controls. Six evenly-spaced linear welds are made. Operator secures work on table; welding operations are automatic (Mar 25, p219).

WELDING POSITIONER — *Aronson Machine Co, Arcade, NY.* Model 21TS Titanium Special welding positioner is a fully automatic unit which provides gas-tight seal plate under the 60-in.-dia, 8-slot table. Table rotation drive is infinitely adjustable over range 0 to 2.7 rpm and has fast positioning speed of 4 rpm. Table tilts 135° in 23.4 sec and elevates 24 in. in 15 sec (Sep 23, p188).

DIAL FEED TABLE—*Taylor-Winfield Corp, Warren, Ohio.* Table, shown here on EB3 press welder, can be supplied with as many as 8 stations. Weld time and indexing time are infinitely adjustable. Automatic hopper loading and unloading may be added for suitable parts assemblies. Electrical rating is 20 kva (Aug 26, p176).

WELDING MANIPULATOR — *C B Herrick Mfg Corp, 2000 Center St, Cleveland 15, Ohio.* Twin-head welding manipulator has electronically controlled ram speed of 5 to 100 ipm. Carriage travel has three forward speed ranges plus a 300-ipm rapid traverse, all electronically controlled. Column and ram rotate 360° within base and may be locked at any position. All controls are in pendant box (Nov 18, p196).

WELDING POSITIONER — *R E Gunther, Princeton Junction, NJ.* Unit is designed for holding parts that are to be joined by soldering, brazing, or welding. It has multiple series of freely swivelling clamps. Two models are available: 9-in.-high model has 1-in. clamping capacity, is priced at $14; larger model has 2-in. clamping capacity, can be used on work up to 4 ft high, and sells for $29 (Apr 8, p212).

WELDING HEAD MANIPULATOR—*Pandjiris Weldment Co, 5151 Northrup Ave, St Louis 10, Mo.* Model 12 x 12 RBM has cat-walk in place of operator's pulpit. Cat-walk allows inspection personnel to inspect operation on large tanks. Manipulator has arc height of 12 ft, horizontal arc travel of 12 ft and is mounted on self-propelled travel car with 360° manual rotation of column; power rotation also available (Apr 8, p182).

WELDING POSITIONER—*Worthington Corp, Positioning Equipment Div, Harrison, NJ.* Model 10P, designed for lightweight weldments, is driven by 1/3-hp electronic variable-speed drive, has capacity of 1000 lb at 4-in. eccentricity and 4-in. center of gravity. Table has dia of 29 in. with four radial T-slots. Height adjustment is from 27 to 42 in., manually or motor operated (May 6, p192).

WELDING POSITIONER TABLES—*Pandjiris Weldment Co, 5151 Northrup Ave, St Louis 10, Mo.* Tables with 165° manual table tilt (30° back tilt) are now standard on company's 100- and 250-lb-capacity positioners. Positioners are 33 in. long, 25½ in. wide and 23 in. high (Dec 16, p190).

MAGNETIC PLATE CLAMP — *Buck Mfg Co, 100 Roberts Rd, Los Gatos, Calif.* Portable PC-6, for positioning and holding work for welding, weighs only 78 lb, stands 10 in. high. Features include direct lift of up to 6500 lb, and reverse polarity switch for quick release (Jan 14, p166).

MANIPULATOR—*Air Reduction Sales Co, Machine Welding Dept, 150 E 42nd St, New York 17, NY.* Welding head manipulator and console control for longitudinal and circumferential welding are designed to accept either Heliwelding or Aircomatic heads. Control console provides all necessary controls for complete programming of welding operation (Jun 17, p206).

PORTABLE PIPE ROTATORS — *Webb Corp, Reed Equipment Div, Webb City, Mo.* Model M-15 rotators, consisting of one variable-speed power rotator and one idler rotator, are used for flame cutting and welding operations. Units require no adjustment for pipe sizes from 2 to 24 in. Single pair of rollers has capacity of 1500 lb (Jul 29, p156).

WELDING MANIPULATOR — *Pandjiris Weldment Co, 5151 Northrup Ave, St Louis 10, Mo.* Metal cylinders and tanks are welded using manipulator and power turning rolls. Longitudinal seams are made with tank clamped; circumferential welds are made with tank mounted on turning rolls. Welding head is mounted on self-propelled travel carriage. Boom rotates 360° and is equipped with power elevation. Unit has capacity of 12 to 36-in. ID up to 12 ft long (Oct 7, p172).

TILTING TURNING ROLLS—*Aronson Machine Co, Arcade, NY.* Unit is used to position tanks for welding flanged heads to body. Unit can be tilted up to 45° in either direction; longest practical length of tank is 20 ft. Rolls are available with capacities from 5000 to 30,000 lb (Jun 17, p206).

HARD-SURFACING ELECTRODES —*Metal & Thermit Corp, Rahway, NJ.* Hardex electrodes are available in 14 different types, each designed to combat a specific type of wear. With less moisture in coating, weld metal porosity is reduced and there is less cracking. They offer greater resistance to impact, abrasion and corrosion, and may be used with either ac or dc current, employing ordinary welding techniques (Jul 1, p154).

WELDING WIRE — *Westinghouse Electric Corp, PO Box 2099, Pittsburgh 30, Penna.* Mild-steel copper-flashed Type MS-21 wire has been developed for use with CO_2 shielding gas, and may be used for inert-gas welding. Available in four dia, 0.040, 0.0625, 0.077, and 0.091 in. (Jan 14, p190).

ELECTRODE—*McKay Co, 1005 Liberty Ave, Pittsburgh 22, Penna.* Hardalloy 32 is an iron-powder, low-hydrogen electrode that deposits an impact and abrasion-resistant surface, works with ac or dc equipment, and has a high deposition rate (Apr 22, p216).

TUBULAR HARDFACING ELECTRODES—*American Brake Shoe Co, American Manganese Steel Div, Chicago Heights, Ill.* Electrodes designed for use with company's MF welder are said to deposit metal up to 200% faster than fastest manual rods. Electrodes are available in two types: S/A manganese wire coils, for manganese steel buildup and repair applications; and S/A 53 for hardfacing (Sep 9, p208).

ELECTRODE—*Hobart Bros Co, Troy, NY.* Rocket 10-LP is an E-6010 type electrode suitable for applications requiring high tensile strength and ductility, such as high pressure steel piping, structural steel work, and in any situation where out-of-position welding is needed. Using free-arc or drag technique, electrode provides a shallow rippled, smooth deposit in all positions, including vertical down (Nov 18, p214).

WELDING ROD—*Eutectic Welding Alloys Corp, Flushing 58, LI, NY.* EutecRod 999FC is designed to join poor-fitting aluminum. Facing surfaces need not be parallel or close fitting, for alloy will bridge gaps, flow over rough surfaces, and build up concave fillets. It has bonding temperature of only 1050 F. Companion flux available (Aug 26, p158).

ELECTRODE WIRE—*Ampco Metal, Inc, 1745 S 38th St, Milwaukee 46, Wis.* Ampco-Trode 160 is available in spooled wire form for joining and overlay with the inert-gas consumable-electrode process. It develops tensile strenghs up to 100,000 psi and hardnesses of 190-200 BHN, and is recommended for joining the higher-strength, harder aluminum bronzes (Dec 2, p178).

ELECTRODE—*Metal & Thermit Corp, 100 Park Ave, New York, NY.* Iron powder electrode, Murex Speedex R, is said to be first iron-powder formulation offered in E-6010 class. It is especially adaptable for welds on machinery parts, and many low-alloy high-tensile steels up to ¼ in. thick (Apr 8, p206).

TORCH HANDLE—*Linde Co, Div of Union Carbide Corp, 30 E 42 St, New York 17, NY.* No. 403 connects directly to standard 3/16-in. Prest-O-Lite assemblies through A-size LH threads on needle valve. Overall length is 7 9/16 in., weight is 10 oz (May 20, p230).

IRON POWER ELECTRODE — *Metal & Thermit Corp, Rahway, NJ.* Speedex Triplex is designed for downhand welding with either drag or open arc technique, and will deposit 16 lb or more of weld metal per hr. It is available in ¼-in. dia only, for use on large fabrication jobs. Welds produced have ultimate strengths of 60,000 to 65,000 psi (Dec 16, p196).

WELDING ELECTRODE — *General Electric Co, Schenectady 5, NY.* Strikeasy 610, reported to be first in E6010 class with iron powder coating, eliminates slag interference, gives more stable arc and improved shielding. Recommended for field construction, tanks, pressure vessels and machinery parts (Feb 11, p161).

ALUMINUM-BRONZE ELECTRODE —*All-State Welding Alloys Co, Inc, 249-55 Ferris Ave, White Plains, NY.* Arc-Braze 20 can be used with dc reverse polarity or high open-circuit ac. It is recommended for braze-welding cast iron, malleable iron, galvanized iron; cast iron to steel, cast iron to bronze; steel to bronze and to aluminum bronze, silicon bronze, or brass. Available in ⅛, 5/32, and 3/16-in. dia (Jul 1, p154).

WELDING and ASSEMBLY—welding accessories

ELECTRODE—*Air Reduction Sales Co, Div of Air Reduction Co, Inc, 150 E 42 St, New York 17, NY.* Airco 90C, for use with small-transformer power sources in the all-position welding of light-gage mild steel, provides good penetration at rapid travel speeds. Welds have tensile strength of 76,400 psi; yield strength 66,500 psi; elongation in 2 in., 24.5%; and reduction of area, 51% (Dec 16, p196).

FILLER ROD—*Ampco Metal, Inc, Weldrod Dept, 1745 S 38th St, Milwaukee 46, Wis.* Ampco-Braz No. 2 is an all-purpose, low-fuming, manganese-bronze rod for brazing and braze-welding steel, cast iron, malleable iron, copper, and copper-brass alloys. It also is used for overlay deposits. Welds have strengths up to 60,000 psi; overlay deposit hardness is 80-100 BHN (500 kg.) (Nov 18, p212).

WELDING ELECTRODE—*Eutectic Welding Alloys Corp, 40-40 172 St, Flushing 58, NY.* EutecTrode 680 AC-DC combines two low-temperature welding alloys, produces joints with ultimate tensile strengths up to 120,000 psi, and is recommended for use on dissimilar alloy steels and wherever embrittlement must be avoided (Feb 11, p189).

ELECTRODE—*Air Reduction Sales Co, 150 E 42nd St, New York 17, NY.* General purpose E6013 electrode, Airco 90B, is a heavily coated electrode of moderate arc force designed to operate in all positions on ac or dc. Said to be particularly useful for welding mild steel to medium carbon and low-alloy steels (May 6, p174).

ELECTRODES—*Arcos Corp, Philadelphia, Penna.* Coated stainless electrodes for light-gage sheet and heavy plate are offered in two types: Aerocor is designed for welding aircraft and light-gage stainless steel. Fabricor is intended for welding stainless plate. Both electrodes are applied with dc reversed polarity (Apr 8, p186).

WELDING ROD—*National Cylinder Gas Co, 840 N Michigan Ave, Chicago 11, Ill.* Redifluxed Bronze 30, for welding bronze and brass and brazewelding cast iron and steel, is flux coated, reduces welding time, cuts gas consumption, improves weld quality. It melts at 1625 F, comes in 3/16 and ⅛-in. diameters (May 20, p223).

WELDING ELECTRODE — *Lincoln Electric Co, Box 5115, Cleveland 17, Ohio.* Jetweld LH-70 is iron-powder, low-hydrogen electrode for welding with high current and for welding crack-sensitive steels and steels producing porosity in weld metal. Available in sizes from ⅛ to ¼ in., it is classified as AWS E-6016 (Mar 25, p224).

ELECTRODE—*Eutectic Welding Alloys Corp, 40-40 172 St, Flushing 58, NY.* Super-SteelTectic 110, for arc welding on mild steels and high-strength low-alloyed steels, is especially effective on thin and dissimilar gages with critical joints. It is recommended for fabrication of high-strength piping and tubing in the flat, horizontal, and overhead positions. It is available in 3/32, ⅛, 5/32, and 3/16-in.-dia sizes (Oct 7, p198).

ELECTRODE—*General Electric Co, Schenectady 5, NY.* Manual arc-welding electrode classified AWS E6013 and designated W613B is heavily coated mild steel, designed to operate on ac or dc in all positions. Moderate arc force is sufficient to give adequate penetration; steady spray-type transfer aids in control and direction of deposit (Apr 8, p180).

ELECTRODE—*Ampco Metal, Inc, 1745 S 38th St, Milwaukee 46, Wis.* Ampco-Trode 40 rod is for repair and fabrication of company's Superston 40, an Mn-Al-bronze casting alloy. Deposits have 95,000 psi ultimate tensile strength, 42,000 psi yield. Rod is available as covered electrode, bare 36-in. filler rod, and spooled wire (Apr 22, p219).

ELECTRODE—*Eutectic Welding Alloys Corp, 40-40 172 St, Flushing, LI, NY.* Low Amp EutecTrode 71 AC-DC, designed for fabrication of chromemoly steel and other high tensile alloy steels, is reported to exhibit as-deposited tensile strengths up to 100,000 psi. It can be used with reverse or straight polarity on dc, and is available in 3/32, ⅛, and 5/32-in. sizes (Jun 3, p176).

FLUX—*Eutectic Welding Alloys Corp, 40-40 172nd St, Flushing 58, New York, NY.* Atmos No. 1 Flux, formulated for cast iron, steel, brass, and bronze is furnished in a plastic squeeze bottle. Flux is expended during welding, leaving minimum residue to be cleaned away. Activity range is between 1300 and 1750 F (Oct 7, p192).

ELECTRODE HOLDER — *Martin Wells, Inc, 5886 Compton Ave, Los Angeles 1, Calif.* Tong-Grip delivers 300 amps on heavy-duty cycle when connected to 00 cable. It weighs 17 oz, and features all-glass insulators and spring cup, slip-on insulator, wedge cable connector (Jun 3, p158).

TIP CLEANERS—*Easy Tip, Box 689, Columbia, Mo.* Cutting-torch tip cleaners are soldered to a metal top and are 2-¾ in. long—long enough to go all the way through tip. Complete set of 12 includes sizes from 48 through 75, and is sold, in plastic container, at $4.80 (Jul 15, p202).

MAGNETIC PLATE CLAMP—*Magnetic Tool Corp, 1955 Lafayette St, Santa Clara, Calif.* Mag-Tool Model PH is designed for holding heavy metal plates in alignment for welding. Clamp exerts force up to 8500 lb, weighs 85 lb, and draws 65 watts (Jun 17, p223).

TORCH LIGHTER—*Thermacote Co, 108 S De Lacey St, Pasadena, Calif.* Torchie provides light as operator passes his torch within a few inches of device. It is equipped with a low-voltage transformer and can be plugged into any 110-v outlet. Price is $9.95 (Oct 7, p198).

INSULATION COATING — *Lovell Chemical Co, Watertown 72, Mass.* No-Short is resistant to all acids and unaffected by heat up to 550 F. Used primarily on electrodes, holders, and seam-welding wheels, material can be painted on (Mar 25, p232).

WELDER KIT—*Air Reduction Sales Co, 150 E 42 St, New York, NY.* Aircomatic Spot Kit converts standard Model 21 manual Aircomatic welding guns for arc spotwelding. It consists of auxiliary control panel, outer barrel, and flat nozzle. Spotwelding of lap joints, or tack welds in butt, lap, or fillet joint can be made on mild and stainless steel (Jun 3, p154).

SIGMA NOZZLE COMPOUND — *Linde Co, Div of Union Carbide Corp, 30 E 42 St, New York 17, NY.* Linde 65 is silicone compound which, when applied to nozzle before welding, forms protective coating over the bore and mouth, thus preventing molten splatter from sticking to nozzle. Under normal operating conditions, a thin coating lasts 8 hr (Jun 3, p178).

FLOWMETERS—*Air Reduction Sales Co, 150 E 42 St, New York 17, NY.* Dual-range flowmeters, 1600 Series, are designed for inert-gas welding, flushing molten metals, laboratory service, and other industrial applications where accurate control and constant visual check of flow rate are required (Sep 23, p207).

SPOT WELDING ACCESSORY—*General Electric Co, Schenectady 5, NY.* Spot and tack welding accessory, for use with GE's semi-automatic Fillerarc wire drive unit, consists of a gun adapter kit and control, and includes a screw-on nozzle and two sets of locating plates plus controls (Mar 11, p175).

MAGNETIC WELDING FIXTURE—*Magnetic Tool Corp, 1995 Lafayette St, Santa Clara, Calif.* Mag-Tool holds ferrous metals in position for welding at any angle without preliminary set-up time. It handles large or small pieces, is portable and requires only one operator. Available in 3 models with max capacity of over 1 ton (Mar 11, p184).

HELIWELD HOLDERS—*Air Reduction Sales Co, 150 E 42 St, New York 17, NY.* Line of holders includes lightweight air-cooled and water-cooled manual holders, a heavy-duty water-cooled manual holder, and three water-cooled machine holders for automatic and semi-automatic Heliwelding (Jun 3, p162).

MANIFOLD—*Linde Co, Div of Union Carbide Corp, 30 E 42nd St, New York 17, NY.* Oxweld M-35 accommodates two cylinders as basic unit, one on each side of operating controls. Straight or curved extensions can then be added in single or double rows to either bank. One bank can be operated independently or both banks can be operated simultaneously (Jun 17, p230).

INSPECTION EQUIPMENT—*Magnaflux Corp, 7300 West Lawrence Ave, Chicago 31, Ill.* KRH-3D portable unit provides source of current for inspecting welds for lack of penetration and fusion, thermal cracks both in weld and parent metal, and other defects. Equipment also includes YM-5 and Y-5 Yoke Kits for detecting cracks open to surface, and a spray-on fluorescent penetrant outfit (May 6, p209).

AUTOMATIC SOLDERING MACHINE—*Castle Machines, Inc, Erie, Penna.* Braze-O-Matic feeds solder automatically through magazines to pre-heated parts. Timing mechanism operates and regulates flame and exact amount of solder in conjunction with index table. System, designed for one operator, works with all forms of soldering and all types of metals (Jun 3, p160).

SOLDERING PENCIL — *Hexacon Electric Co, 135 W Clay Ave, Roselle Park, NJ.* Soldering pencil is equipped with long-life ¼-in. tip, is rated at 50 watts, and weighs 2 oz. Stainless housing for element keeps handle cool. Tip and element are available separately. Tool, designed for constant duty, operates on ac or dc, 110 or 220v (Jun 3, p178).

SOLDER—*Farrelloy Co, 1217 N 26th St, Philadelphia 21, Penna.* Farco All Metal has been improved to make it more corrosion resistant. Solder withstands 20% salt spray bath for 800 hr, has affinity for all metals including aluminum, and has melting point only 27 F higher than 50-50 solder. Sample order, 1 lb wire solder for $2, 1 lb flux for $3.50 (Jul 29, p156).

SOLDERING-GUN ATTACHMENT—*Atlas Mfg Co, Inc, 1126 S Decatur St, Montgomery 6, Ala.* Solder-Matic is trigger-operated feeding device which feeds solder from a spool through a guide tube to tip of gun. Attachment fits all popular models of electric soldering guns (Jun 3, p166).

SOLDERING SHEET—*Aluminum Co of America, 1501 Alcoa Bldg, Pittsburgh 19, Penna.* Zinc-clad aluminum alloy is fabricated with one or both sides clad, and in coil or flat sheet form. Product is especially designed to facilitate soldering of heat-exchanger equipment (Apr 8, p206).

ROSIN-CORE SOLDER — *Federated Metals Div, American Smelting & Refining Co, 120 Broadway, New York 5, NY.* RTS-300 is said to have outstanding non-corrosive characteristics and minimum odor. Company stocks 40/60 and 60/40 lead-tin combinations of the solder in 0.062-in.-dia wire, in 15, and 20-lb spools (Jan 14, p185).

SOLDERING FLUX—*American Solder & Flux Co, 19 & Willard Sts, Philadelphia 40, Penna.* Amco 261 has been developed for use with alloys with melting points as low as 150 F. Used with conventional solders, cleaning action will begin at 150 F and continue right up to melting point of regular solder (May 20, p225).

SOLDER-TYPE ALLOY — *Eutectic Welding Alloys Corp, Flushing 58, NY.* EutecRod 157B is a high-strength, silver-bearing, lead-free alloy for joining stainless steel and other base metals. It comes in coil form in ⅛, 1/16, and 3/64-in. dia, and is adaptable to all common heating methods (Oct 7, p190).

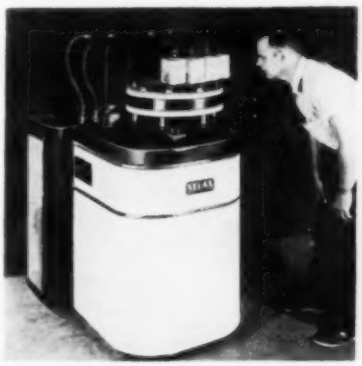
FLUX—*Farrelloy Co, 1217 N 26th St, Philadelphia 21, Penna.* AG flux, developed to increase the bond of silver solder on stainless, monel, nickel, copper, brass, bronze, and steel, is a low-melting flux with powerful scavenging action that acts on the silver solder to eliminate time lag between fluidity of solder and its adherence to the parent metal (Nov 18, p222).

SOLDERING MATERIALS — *Aluminum Co. of America, Pittsburgh 19, Penna.* Solder No. 805 and Soldering Flux No. 66 are formulated for joining all aluminum alloys, and making joints between aluminum and other metals such as copper, brass, steel, stainless, and nickel. Solder has melting range of 715 to 725 F, and works most effectively when preplaced in or near joint (Aug 12, p174).

SOLDERING IRON—*Linde Co, Div of Union Carbide Corp, 30 E 42 St, New York 17, NY.* Prest-O-Lite 406 Medium is designed to handle all but heaviest soldering jobs. Operating on acetylene, tool heats up in less than two min; is available with interchangeable, pointed or chisel-edge copper soldering heads (Feb 25, p200).

SOLDERING FLUX—*Farrelloy Co, 1217 N 26th St, Philadelphia 21, Penna.* Wetoil is stable non-acid flux for soldering copper, brass, steel, and terneplate, which reduces surface tension of metal to be soldered thereby increasing flux activity. It penetrates oil and grease, withstands wide temperature range without oxidizing. Price $2.75 per gal (Apr 22, p214).

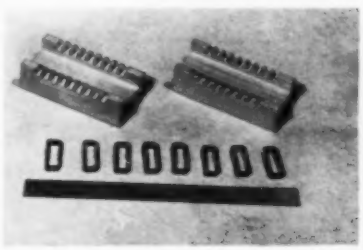
SOLDER-TYPE ALLOY — *Eutectic Welding Alloys Corp, 40-40 172nd St, Flushing 58, NY.* EutecRod 158-B, a flux cored solder-type alloy designed for joining and sealing steels, copper, and nickel alloys, has application temp range of 400-500 F. Product is available in ⅛, 1/16, and 3/64 in. dia (Nov 4, p208).



BRAZING MACHINE—*Selas Corp of America, Dresher, Penna.* Automatic brazing machine uses company's Gradiation heating process for silver brazing and similar joining operations. Cigarette lighter components are joined at production rates on a rotating conveyor. Parts can be brought to temperature in 15 sec by four Duradiant gas-fired burners, permitting a production rate of 1500 parts per hr (Oct 21, p212).

BRAZING TECHNIQUE — *Waveline, Inc, Caldwell, NJ.* Flux-Dip brazing technique for joining complex, multi-joint aluminum assemblies in one operation is said to eliminate many drawbacks of hand brazing. Controlled uniform heating eliminates warp and distortion; filler alloy penetrates all joints; solder build-ups are eliminated (Jun 17, p202).

BRAZING MATERIAL—*American Silver Co, 36-07 Prince St, Flushing 54, NY.* Braze-Clad N, supplied as pure nickel strip with predetermined thickness of silver brazing alloy on one or both sides, is recommended for high temperature applications, such as stainless steel honeycombs, electronic tubes, jet aircraft, and nuclear structures. Fabrication and application is same as previous Braze-Clad materials (AM—May 7 '56, p237) (Jun 17, p218).



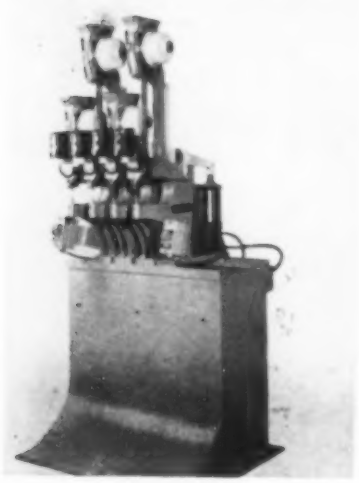
CERAMIC JIGS—*Technion Design & Mfg Co, 262 Mott St, New York 12, NY.* Sur-Braze Grade M120-F ceramic, available in raw forms for customer's fabrication, or as machined parts, is recommended for jigs to help speed induction brazing operations. Material is non-conductor with good dielectric strength; resists flux penetration; does not warp or oxidize at temperatures over 1200 F (Mar 25, p198).

TINNING COMPOUND — *American Solder & Flux Co, 19th & Willard Sts, Philadelphia 40, Penna.* Amco No. 2679 is available in powder form for tinning all metals prior to babbitting. It is said to form a strong, permanent chemical bond with cast iron, steel, and all metals used for bearings. Furnished in 1, 5, and 50-lb containers (Dec 16, p190).

BRAZING ALLOY — *Handy & Harman, 82 Fulton St, New York 38, NY.* Alumibraze, supplied as dry powder and applied as aqueous slurry, is self-fluxing and is designed for use in molten salt bath to join following alloys: 2S, 3S, 52S, 54S, 61S, 62S, 63S, 66S, and several casting alloys (Apr 22, p219).

BRAZING ALLOY — *Wall Colmonoy Corp, 19345 John R St, Detroit 3, Mich.* Nickel-chrome-boron high-temperature brazing alloy known as Nicrobraz is one of series of alloys for use in brazing of stainless and high-alloy steels. Series features high tensile and shear strengths. Material has been used up to 1300 F (May 20, p206).

BRAZING RINGS — *Wall Colmonoy Corp, 19345 John R St, Detroit 3, Mich.* Prefabricated Nicrobraze rings are intended for use with stainless-steel tubular assemblies. Tolerances are guaranteed within 0.001 in. Rings are designed to slip over the tube to be brazed (Jan 14, p188).



RIVETING MACHINES — *Milford Rivet & Machine Co, Milford, Conn.* Machines have been designed for special applications: Model FS, multi-spindle pneumatic (illustrated), for production operations; Model FM, pedestal-type, for riveting in deep channel sections and hard-to-reach areas; and Model RT-52, fully automatic dial-fixture machine for light work (Jun 17, p206).

RIVETERS—*Lemert Engineering Co, Inc. 201 E. Jefferson St, Plymouth, Ind.* Airflex riveters feature adjustable anvil, fabricated steel base and built-in sound deadening chamber for exhaust air. Manual foot-pedal model and electrically-operated-and-timed model are designated ANB and cover range of rivet capacity from 1/32 to ½ in., based on solid mild steel. Machines combine spindle rotation to 500 rpm and impact rates to 16,000 bpm (Mar 11, p177).

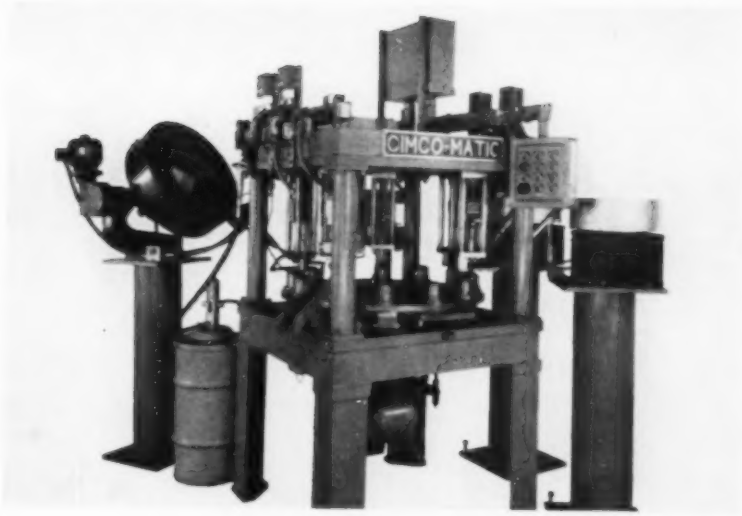
BENCH RIVETER—*Lemert Engineering Co, Inc, 201 E Jefferson St, Plymouth, Ind.* SPB bench riveter has 7-in. throat, comes in 3 sizes for solid or hollow rivets 1/32 through ¼ in., and features a spinning-impacting type of operation. Air-operated unit is 11 x 13 x 27 in. high (Mar 11, p202).

AIR-POWERED RIVETER—*Industrial Control Products Inc, Caldwell, NJ.* Multi-purpose, air-powered unit is designed for riveting, peening, swaging, milling and cutting. Stroke can be adjusted to work inside recessed pieces. Machine operates at 5000 spm with air pressure up to 100 lb; consumption is 4 cfm. Machine can operate on pressure as low as 10 lb (Dec 16, p174).

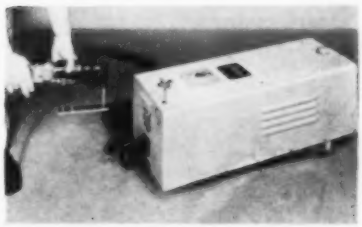
IMPACT HAMMER—*Heidrich-Nourse Co, 631 E Third St, Los Angeles 13, Calif.* Model 200-RH pneumatic hammer uses hammer of constant stroke, with impact force regulated by adjustments in air pressure. Contact pressure opens hammer valve, and so long as tool is held down hammer will repeat, striking from 2000 to 4000 times per min. Max riveting capacity in mild steel is 5/16-in. dia (Jul 1, p148).

RIVETER—*Barret Equipment Co, 21st and Cass Ave, St Louis 6, Mo.* Air powered riveter has 8-in. throat and a capacity of ⅝-in. solid brass, copper, or iron rivets. Instant-change toolholder speeds changing of punches, knurls, and other tools. Machine has adjustable ram stroke and a quick-release air valve. Unit can be supplied as floor or bench model (Sep 9, p202).

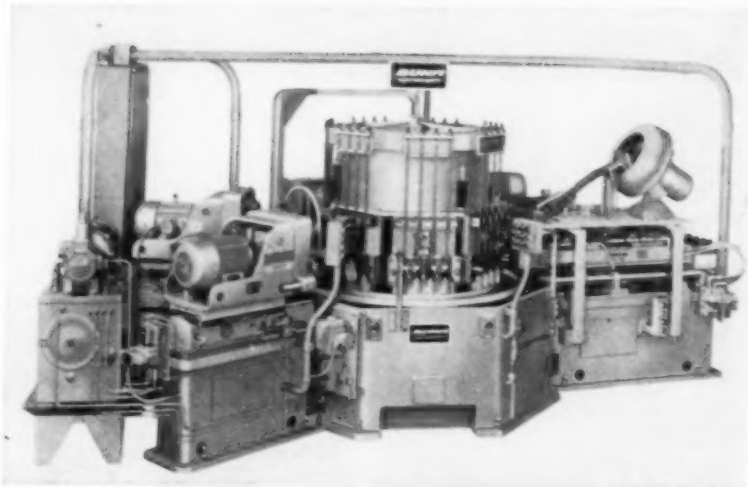
RIVET-SETTER — *Tubular Rivet & Stud Co, Quincy, Mass.* New Model 109 has been added to line of double-drive, adjustable-center rivet-setting machines. Also available is a multi-head riveter, which is capable of setting two or more rivets simultaneously (Oct 21, p203).



UPPER HORN BEARINGS—*Cimco Engineering Co, Ann Arbor, Mich.* 12-station machine assembles 900 units per hr. Machine has Model MDA24LT index table, 36-in. dial plate, pneumatic operated work stations, and electrical control system (May 6, p190).

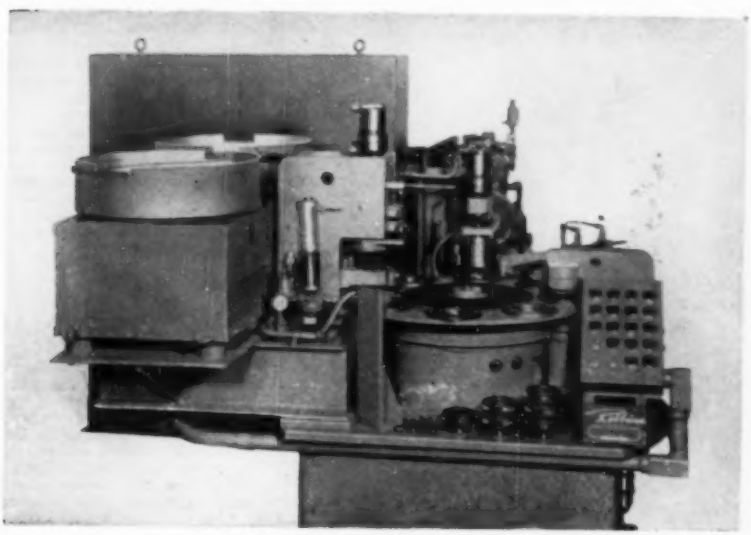


FASTENER DRIVER—*Huck Mfg Co, 2480 Bellevue Ave, Detroit 7, Mich.* Series 700 power cell and new Huck Model 607 hydraulic tool are designed for double-driving application of commercial or aircraft Huckbolt fasteners up to ½-in. size. Maximum interference fits can be produced using this equipment. Cell has a capacity of 6 qt of oil, and can be supplied for 110, 220, or 440-v operation (Oct 7, p168).



STEERING GEAR COMPONENTS—*Buhr Machine Tool Co, Ann Arbor, Mich.* Components are machined and assembled at rate of 489 pieces per hr on Economatic. Operations are as follows: manually load four pieces and automatically power clamp; spot-drill for countersink; drill through for ream; end cut ream to straighten hole; size ream; press in pin; automatically unclamp and manually unload pieces (Oct 21, p218).

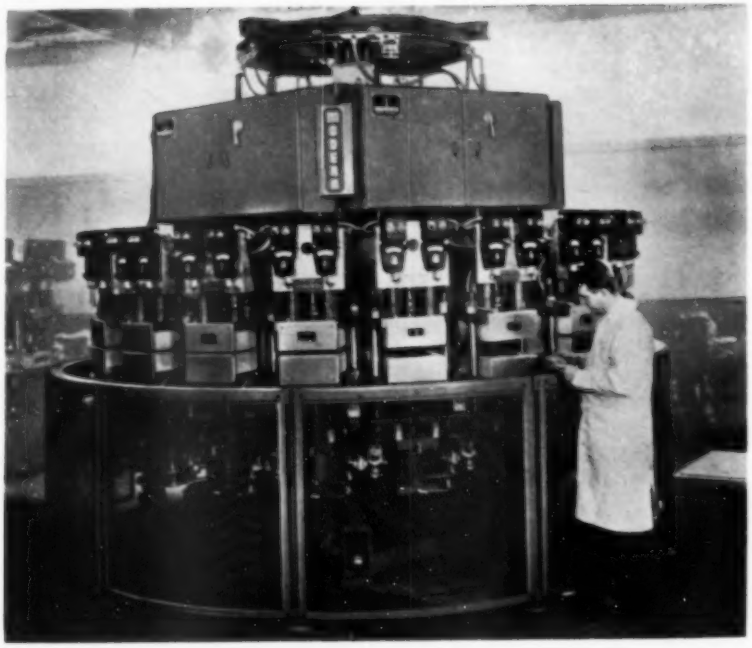
PIN INSERTERS—*Aidlings, Inc, 1613 East New York Ave, Brooklyn 12, NY.* Machine called Pinserter can be used to feed and insert all types of pins—Roll-Pins, Sel-Locks, Groov-Pins, etc. Model illustrated is set up to feed special pin to gear and shaft assembly of computer. Unit can be used on shafts and hubs, sandwiches of materials, and other pinning operations (Jun 3, p160).

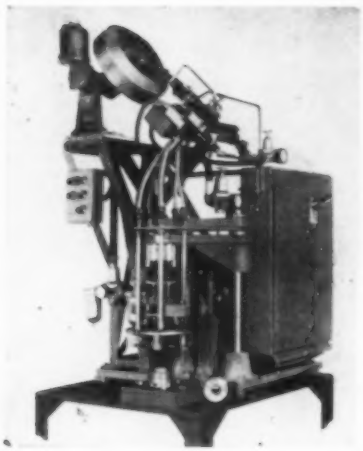


FASTENER FEEDING EQUIPMENT—*Geo A Tinnerman Corp, Box 2805, Cleveland 16, Ohio.* New line includes Pneuma-Serve Model PS-5B. Machine accommodates screws with any type of pre-assembled washer—lock washers of internal tooth, external tooth, or spring type, as well as plain or spanner-type washers. New tools can feed screws of any type (Aug 12, p172).

GEAR ASSEMBLY MACHINE—*Omer E Robbins Co, 24800 Plymouth Rd, Detroit 39, Mich.* Transmission gear assemblies are assembled and dredged on 8-station machine. Assembled with dummy pins, assemblies are manually loaded. At first station permanent pins are inserted; second station checks press fit of pins; rejects are sorted out at next station; final operation is staking of pins on acceptable pieces (Jul 29, p152).

BONDING MACHINE—*Modern Industrial Engineering Co, 14330 Birwood Ave, Detroit 38, Mich.* Automatic multi-station rotary-cycle bonding machine is one of series of machines ranging from single and multi-station stationary types to 40-station rotary types. It is designed for permanently bonding liners to either internal or external surfaces. Output for single-station machine is about 10 parts per hr for a curing cycle of 6 min (May 20, p192).

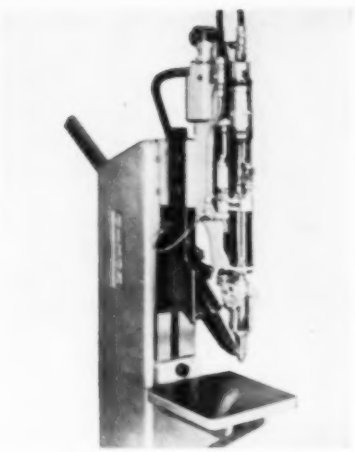


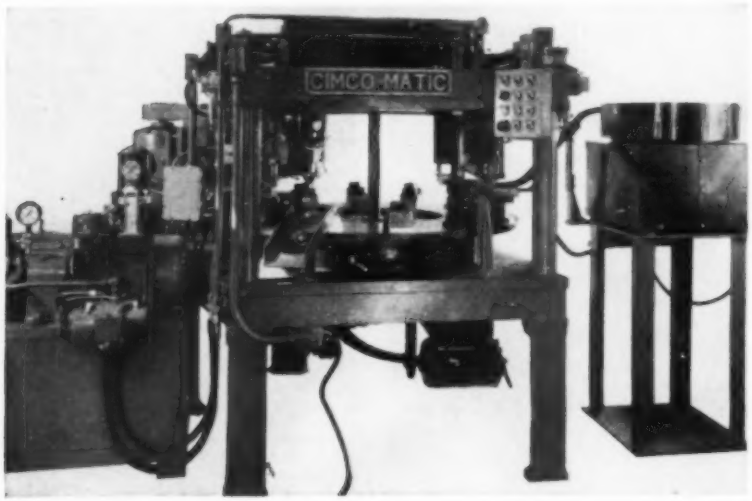


SCREWDRIVING MACHINE—*D & L Tool & Machine Co, 990 S Oakwood Ave, Detroit 17, Mich.* Designed to automatically feed and drive five screws in transmission stator, machine handles 700 stators per hr. Head carries 5 Chicago Pneumatic Magnamatic air drivers, is so designed that when it approaches workpiece and air motors are about to engage, screws are released into proper holes, thus permitting drivers to drive them home, maintaining pre-determined torque (Apr 8, p173).

SETSCREW DRIVER — *Bristol Co, Socket Screw Div, Waterbury, Conn.* Machine will automatically feed and drive standard socket setscrews at rates up to 1800 per hour. Screws in diameters down to No. 2 wire size and up to $\frac{5}{8}$-in. dia can be driven, with lengths down to and shorter than the diameter ("square screws") (Nov 18, p191).

STUD DRIVER—*Gray Equipment Co, 13600 Ford Rd, Dearborn, Mich.* Heavy-duty Model STD drives studs of up to $\frac{5}{8}$ in. dia, and will give up to 630 in.-lb of driving torque. Available with either single or multiple spindles, it is equipped with up to 3-hp spindle drive and has air-hydraulic spindle feed (Dec 30, p122).





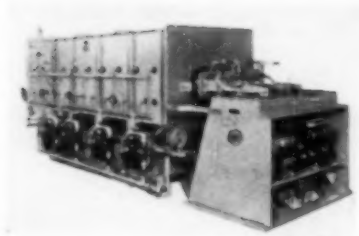
AUTOMATIC SCREWDRIVER—*Dixon Automatic Tool, Inc, Rockford, Ill.* Autodriver, Model SD-1, operating at 2000 rpm with 3-in. stroke, can drive screws and nuts up to 5/16-in. size at speeds up to 60 per min. Operating on 80-psi airline pressure, machine features air motor with easily adjusted torque range of 10 to 108 in.-lb, and a sensing system that stops machine if screw or nut is not placed or properly torqued (Sep 23, p196).

ASSEMBLY MACHINE—*Cimco Eng'g Co, Ann Arbor, Mich.* Special machine, Series 4054, which assembles upper ball-joint units for automobile steering gear, features two spinning operations incorporated into a 10-step assembly sequence involving 8 different parts. Machine has hopper feed unit, automatic ejection, and can assemble 600 units per hr (Sep 23, p196).

HEATING AND HEAT TREATING

◀ FLAME HEATING MACHINE — *Cincinnati Milling Machine Co, Process Machinery Div, Cincinnati 9, Ohio.* Flamatic selective flame heating machine embodies building-block construction to provide a high degree of flexibility for a wide variety of flame heating applications. Spindle speeds are infinitely adjustable from 15 to 375 rpm. Automatic spindle retraction of 10 in. (max) at end of heating cycle instantly drops workpieces into quench tank (Nov 18, p188).

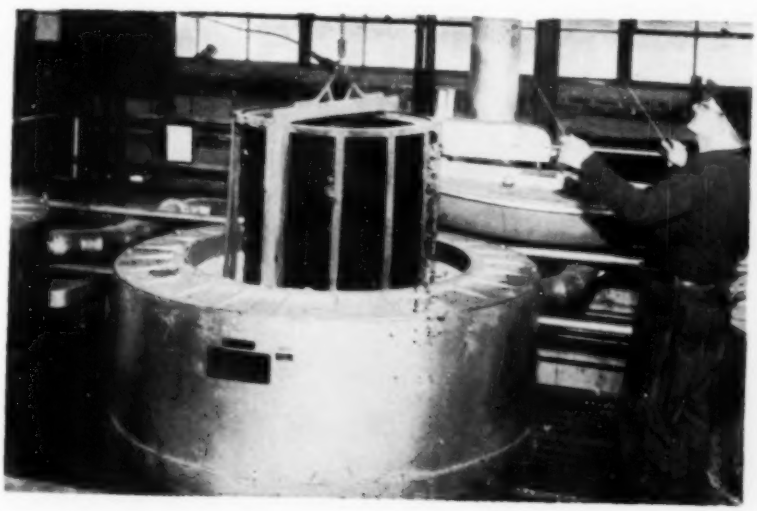
INDUCTION HEATERS—*Reeve Electronics, Inc, 609 W Lake St, Chicago 6, Ill.* Model L4E, designed for ferrous metals, and Model L6E, for non-ferrous metals, are floor-mounted units designed for induction heating in operations such as brazing, soldering hardening and annealing. They feature built-in output transformer, variable power output control from 3 kw to ½ kw, automatic recycling heat-cycle timer (Jun 17, p223).



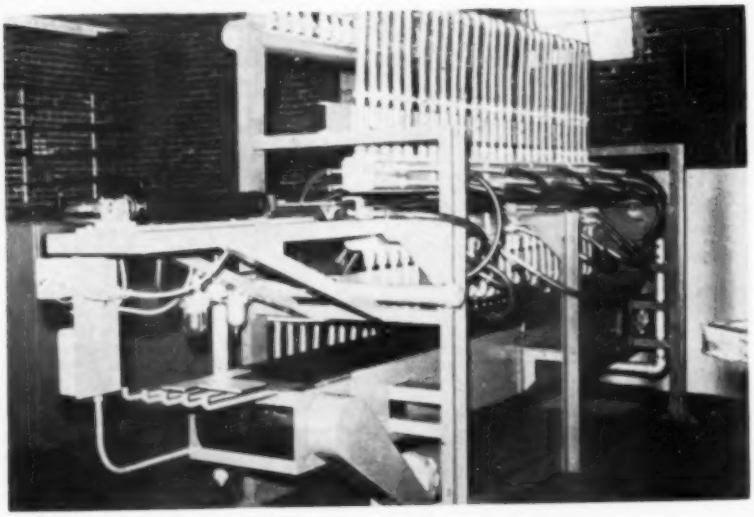
INDUCTION HARDENING — *Radio Frequency Co, 44-46 Park St, Medfield, Mass.* Induction heater line incorporates powdered-core output transformers. Typical application was to harden knurled end of spring-shackle bolt to depth of approx 0.012 in. without hardening or heating areas adjacent to knurl. All operator does is push pin into coil where it automatically turns on machine for interval needed, and remove it. Time is 1/10 sec on a 10-kw machine (Apr 8, p180).

CONTROLLED ATMOSPHERE FURNACES—*L & L Mfg Co, 136 8th St, Upland, Delaware County, Penna.* New line of controlled atmosphere furnaces, designated Atmo-Carb, is designed for heat-treating steel. Temperature range is 2000 F. MHE series has a shuttle muffle with a loading elevator; MHD series has a direct loading muffle with a vertical counterbalanced door and features a flame seal (Dec 30, p130).

FURNACE—*American Gas Furnace Co, 1006 Lafayette St, Elizabeth, NJ.* Two, parallel, sealed hearths are mounted in Model 242 shaker furnace to double heat treating production of same work or to heat treat two different types of parts which require same atmosphere for processing at same or different time cycles. Each hearth is intended to process up to 800 lb of work per hr (May 6, p178).



▶ COMPRESSOR-BLADE RINGS — *Surface Combustion Corp, 2375 Dorr St, Toledo 1, Ohio.* Jet engine parts are heat treated in specially designed pit-type draw furnace. Construction of basket facilitates discharging of rings by use of overhead hoist. Tempering is carried out between 1100 and 1200 F using cycles of 2 to 6 hr (Jul 15, p190).

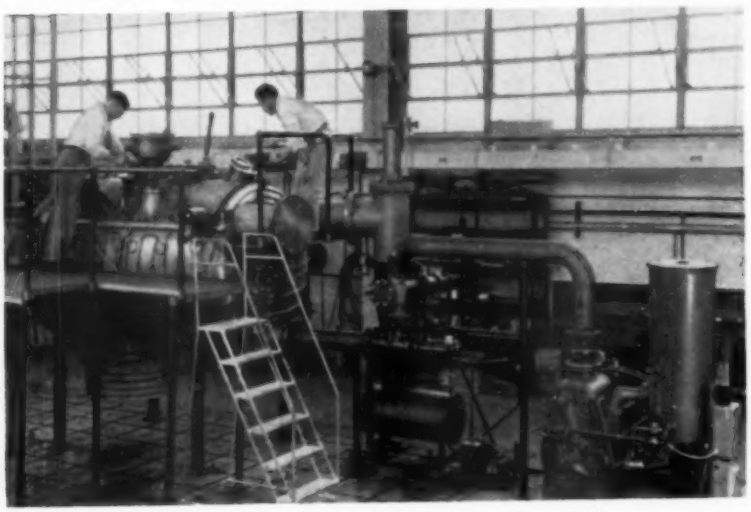


OXIDE REDUCTION FURNACE — *Pereny Equipment Co, 893 Chambers Rd, Columbus 12, Ohio.* Sectionalized metal oxide reduction furnace is equipped with an endless feed belt of mild sheet steel. Max operating temperature range is 1900 to 2000 F. Belt speed is variable from 5 to 50 fph. Over-all size of the furnace is approx 3 ft 10 in. wide x 6 ft 1 in. high x 38 ft long (Sep 23, p189).

CONVECTION OVEN—*Blue M Electric Co, Blue Island, Ill.* Heavy-duty unit uses Power-O-Matic automatic control system. Control point is ±1 F throughout entire range. Model has five individual sliding, perforated drawers, 18½ in. wide, 20 in. long, 5 in. deep; 100 to 440 F temp range. Components being processed may be removed from each drawer without disturbing those in other drawers (Nov 18, p210).

LOADERS AND UNLOADERS—*Ipsen Industries, Inc, 721 S Main St, Rockford, Ill.* Designed for use with company's heat-treating units, these loaders and unloaders incorporate roller platforms with table-type mechanisms. Both units are available for stationary mounting, or can be equipped with either free-running or motor-driven wheels on track for transverse servicing of a number of furnaces (Dec 2, p164).

GAS - BURNER ASSEMBLIES — *Eclipse Fuel Engineering Co, Rockford, Ill.* RT Series packaged units can be installed directly on metal or ceramic radiant tubes. Five series, ranging from 250,000 to 625,000 Btu, are offered. Mounting can be slipfit or flange type. Regulation of air and gas can be fixed or adjustable. Three types of ignition are available: gas pilot, spark, or pilot-spark combination (Feb 25, p194).

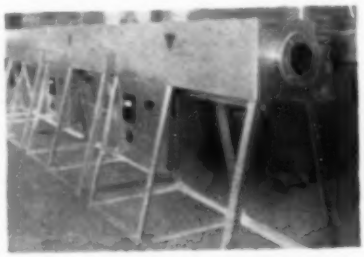


CHAIN ATTACHMENT BLANKS — *Gas Appliance Service, Inc, 1940 W Balmoral Ave, Chicago, Ill.* Blanks are heated on this unit prior to making a right-angle bend. Blanks, up to ⅝-in.-thick steel, 12 in. wide, are placed on rails and pushed through heat zone by timer-actuated air cylinder that may be set at any desired number of strokes per min. Production is 150 units per hr (Aug 26, p166).

CARTRIDGE HEATING UNIT—*Watlow Electric Mfg Co, 1376 Ferguson, St Louis 14, Mo.* Firerod unit is adaptable for high heat-concentration needs of titanium forming dies. Test unit, ⅞-in. OD by 2¼ in. long, rated at 115v, 250w, has operated in open air for periods up to 720 hours at sheath temp of 1800 F (Apr 22, p217).

MOTOR-GENERATOR SETS—*Induction Heating Corp, 181 Wythe Ave, Brooklyn 11, NY.* Induction heating motor-generator sets of new Ther-Monic line have capacities of 30-50 kw and 100 kw. Release describes a Ther-Monic 100-kw 10,000-cycle motor-generator with its master control and heating station (Nov 4, p194).

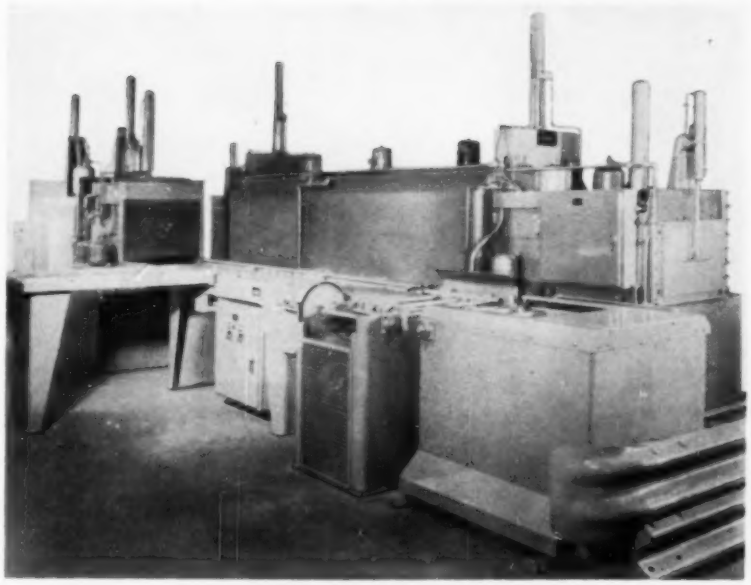
FURNACES—*L & L Mfg Co, Upland, Delaware County, Penna.* Series HFC forced-convection furnaces, used for such operations as aluminum brazing, tempering, drawing, normalizing and hardening, are available in 15 standard models. Sizes (inside dimensions) vary from 13 in. high x 13 in. wide x 25 in. deep to 36 in. high x 40 in. wide x 72 in. deep. Heat range is from 250 to 1875 F (Feb 25, p198).



TUBE FURNACE—*Pereny Equipment Co, 893 Chambers Rd, Columbus 12, Ohio.* Furnace is built up from individual units (either 5 or 11 ft long) each with integral controls. Typical section, with max operating temperature of 1250 F, is 17 in. wide, 17 in. high (plus legs), and 11 ft long. Muffle is 6-in.-ID alloy tubing. Power requirements are 30 kw, 220/60/3 (Aug 12, p120).

INDUCTION MELTING FURNACE —*Consolidated Electrodynamics Corp, 300 N Sierra Madre Villa, Pasadena, Calif.* Model FIM-300 has an 8-ft long, 5-ft-dia chamber, a 2900-liter-per-sec diffusion-ejector pump, a 310-cfm mechanical pump, and a control center. It has a capacity of 50 to 300 lb. Four independently controlled charging cups allow regulation of rate and amount of additions (Nov 4, p188).

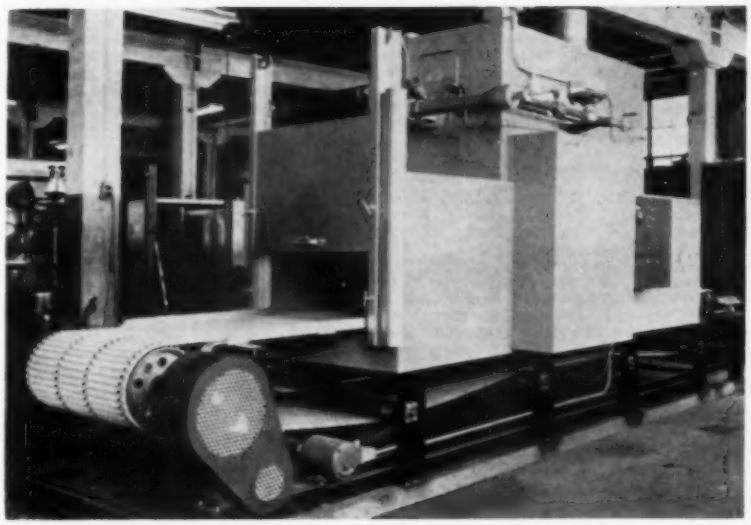
PRODUCTION FURNACE — *Ipsen Industries, Inc, 715 S Main St, Rockford, Ill.* B-Model P-6-3030 Pusher Tray furnace features integrated oil quench and self-purging charge vestibule. Unit can be used for neutral bright hardening, bright gas carburizing or carbonitriding. When built for carburizing, first zone has initial heating capacity of 1000 lb steel per hr; two additional zones afford soaking interval control, and all zones have full forced-circulation heating (Oct 21, p212).

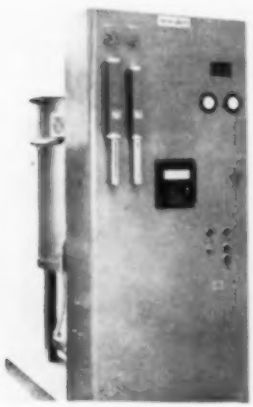


ROD HARDENING MILL—*New Rochelle Tool Co, 320 Main St, New Rochelle, NY.* Mill length shafting is hardened to specific hardness and depth on Thermotool progressive mill which handles carbon steel rods up to 4 in. dia and 30 ft or more in length. Skewed-roll arrangement driven by two variable-speed motors permits feed rate and rotation speed of rods to be adjusted independently (Apr 22, p194).

FURNACES — *Laboratory Equipment Corp, St. Joseph, Mich.* Tube furnaces and box furnaces feature lighter, less-expensive tranformers, in addition to entirely new type resistance elements (Oct 21, p201).

CONTINUOUS BELT CONVEYOR OVEN — *Grieve-Hendry Co, Inc, 1401 W Carroll Ave, Chicago 7, Ill.* Oven is designed to fit into automated lines, and can be arranged for both automatic loading and unloading facilities. Unit is gas fired and has a max temperature of 450 F. The belt is 36 in. wide, is driven by an electric motor, and is adjustable over a speed range of 2 to 10 fpm. Inside dimensions of the baking chamber are 38 in. wide x 24 in. high x 15 ft long (Nov 4, p186).





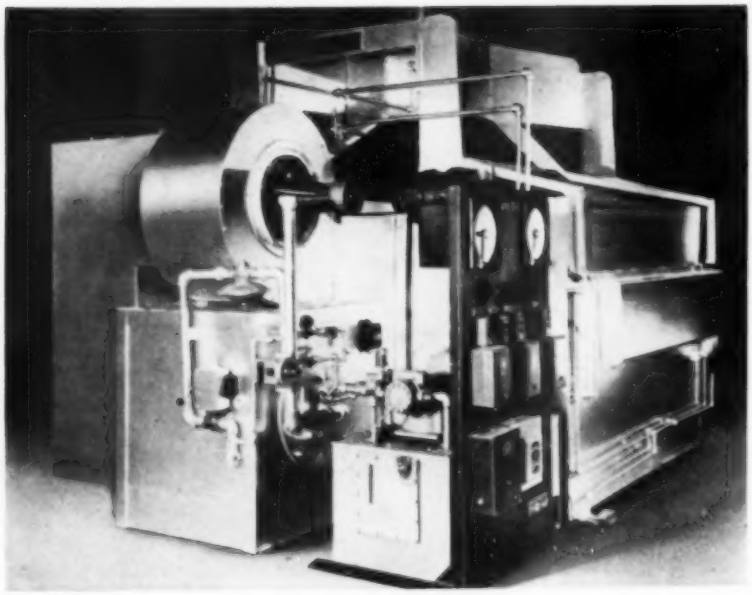
ENDOTHERMIC GENERATOR — *Hevi-Duty Electric Co, Milwaukee 1, Wis.* Model MK-524-EN produces 250 cu ft of atmosphere per hr for heat-treating processes—bright hardening of medium and high-carbon steels and alloy-carbon steels, bright hardening of high-speed metals, annealing and normalizing, bright copper brazing, sintering and powder metallurgy processes, and carrier gas for carburizing and carbonitriding (May 20, p194).

INDUCTION HEATER—*Reeve Electronics, Inc, 609 W Lake St, Chicago 6, Ill.* Bench-mounted unit, Model L6E, can be used for soldering, brazing, hardening, annealing, and other production operations. The 2-kw unit measures 28 in. high, 25 in. wide, 18 in. deep, and has built-in automatic recycling heat-cycle timer, circuit breaker, interlocks, and cooling system (Feb 25, p214).

ROTARY OVEN—*Grieve-Hendry Co, Inc, 1401 W Carroll Ave, Chicago 7, Ill.* Built to load and unload from same position by single operator, oven permits continuous movement of work in and out of heating zone. Speed range from 1 to 5 revolutions per hr, makes oven practicable for processing many types of products. Maximum working temperature is 1000 F (Feb 25, p204).

TEMPERATURE CHAMBER—*Mantec, Inc, Dept CD, 126 Maryland St, El Segundo, Calif.* Model D-104 with 5 cu-ft chamber controls temperature automatically within ±2 F over range from —100 F to +400 F. It drops temperature to —65 F in 5 min; raises to +400 F in 10 min; has 100-lb dry ice capacity. High temperatures are supplied by electric heating element (Jun 3, p158).

VACUUM FURNACES — *Hevi-Duty Electric Co, 4212 West Highland Blvd, Milwaukee 1, Wis.* Standard vacuum furnances are available for either single or double pump vacuums. Double pump, pit or bell-type furnaces are built to operate up to 2100 F. Single pump vacuum retorts for bell, pit, box, or tube-type furnaces are not recommended for temperatures above 1600 F (Oct 21, p226).



VERTICAL MOTOR GENERATORS —*Welduction Corp, 10250 Capital Ave, Oak Park 37, Mich.* Units for induction heat treating applications are available in frequencies of 1000, 3000, and 10,000c, with output ratings from 10 to 250 kw. Motor generators are totally enclosed and air cooled (Feb 11, p170).

TUBE FURNACE — *Hevi-Duty Electric Co, 4211 West Highland Blvd, Milwaukee 1, Wis.* Double-end molybdenum tube furnace, capable of operating at temperatures of 3000 F, features a gas-tight chamber to prevent excessive hydrogen losses and a water-jacketed cooling chamber on the discharge end to prevent thermal shock (Nov 18, p206).

INDUCTION HEATING WORKTABLE—*Welduction Corp, 10250 Capital Ave, Detroit 37, Mich.* Self-contained, 2-station worktable is designed for hardening, brazing, annealing, and soft-soldering operations. Standard units are equipped with 220/440, 3-phase motor generators available in ratings from 7½ to 30 kw. Dimensions: 40 in. wide x 56 in. long with work area height of 40 in. (Jul 1, p133).

ELECTRIC FURNACE—*BTU Engineering Co, 440 Somerville Ave, Somerville 43, Mass.* BTU Transheat furnace, designed for alloying, brazing, and soldering of transistors and other semi-conductor products, features muffle design for controlled temperature profile, variable-speed drive, stainless-steel belt, and multiple temperature control zones (Apr 22, p212).

CHILLING MACHINE — *Cincinnati Sub-Zero Products, 5950 Reading Rd, Cincinnati 29, Ohio.* Model LA-120-2 reportedly permits accurate control of temperatures from + 25 F to —135 F. Chamber is 24 in. long, 12 in. wide and 12 in. deep. Thermal capacity is approx 400 Btu per hr at —120 F (May 6, p182).

FURNACE—*L & L Mfg Co, 136 8th St, Upland, Del Cty, Penna.* Model V3672-S will heat 2000 lb of steel to 2000 F in 4 hr. Unit is front-loading, floor type and has range of 30 to 2300 F. Inside dimensions are: 40 in. wide, 36 in. high from hearth plate to spring of arch; 44½ in. to center of arch, 72 in. deep (Feb 11, p170).

INDUCTION HEATERS — *Magnethermic Corp, Youngstown, Ohio.* Each heater in new line of electronic induction heaters can be fitted out for a specific heating application. Heaters can be furnished either with a single or two-position output. Units are available in ratings of 15, 30, and 40 kw (Aug 26, p178).

COLD UNIT—*Webber Engineering Corp, P O Box 217, Dept 287, Indianapolis 6, Ind.* Model WE-8-125 industrial freezer has 8-cu-ft capacity. Pull-down on unit is from ambient to —100 F in 30 min with temperature range from ambient to —125 F. Four baskets measuring 10 x 10 x 10 in. handle components; inside dimensions, 24 x 24 x 24 in.; outside, 72 in. long, 36 in. wide and 38 in. high (Apr 8, p188).

INDIRECT FURNACE—*Detroit Electric Furnace Div, Kuhlman Electric Co, Bay City, Mich.* Pedestal-mounted Series P furnaces have magnetic amplifier arc-control system permitting variation in speed of control motor so that speed is directly proportional to unbalance. Capacities from 350 to 3000 lb; kw ratings from 125 to 600 (Feb 11, p158).

CHILLING MACHINE — *Cincinnati Sub-Zero Products, 5950 Reading Rd, Cincinnati 29, Ohio.* Model 3SR-120-47 low-temperature chilling machine utilizes new sub-zero quenching method for hardening stainless steels. Machine has net thermal capacity of approx 6000 Btu per hr at 120 F. Using convection fluid, it will chill 250 lb of steel per hr from +80 to —120 F (Jun 3, p164).

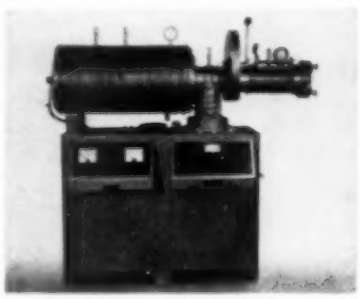
FURNACE—*Waltz Furnace Co, Dept 1, Symmes St, Cincinnati, Ohio.* Circulating-type furnace, either gas or electric heated, is designed to flatten steel sheets as large as 74 x 100 in. during tempering or precipitation-hardening operations. Doors allow furnace to be used at both ends. Controls hold temperatures to ±5 F in range of 250 to 1100 (Feb 11, p168).

VACUUM INDUCTION FURNACE —*NRC Equipment Corp, Subsidiary of National Research Corp, 160 Charlemont St, Newton Highlands 61, Mass.* Model 2551-B has a nominal capacity of 12 lb of molten steel. Unit can be used for sintering, brazing, annealing, degassing, and heat treating, as well as melting and casting (Nov 18, p202).

HEAT TREATING SYSTEM—*Eclipse Fuel Engineering Co, Rockford, Ill.* Clean-Line heat-treating system can be supplied as package installation, with matching heat-treat furnace and quench tank, endothermic generator, tempering unit, and automatic washer. Basic unit is furnace for clean hardening, carbo-nitriding, carburizing, carbon restoration, and annealing up to max operating temperature of 1850 F (Jul 1, p140).

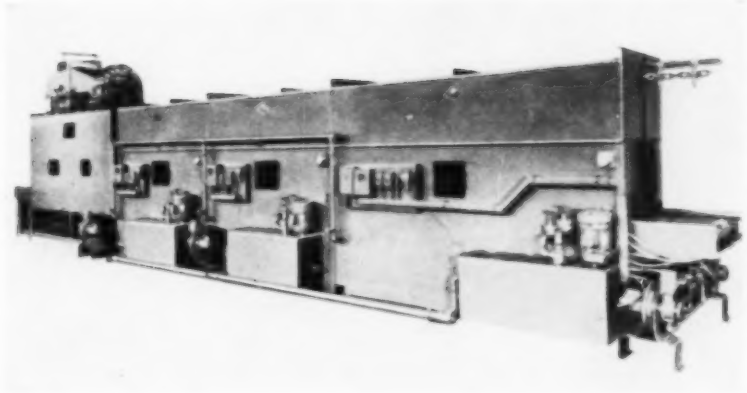
HEATING ELEMENTS—*Cooley Electric Manufacturing Corp, 50 S Shelby St, Indianapolis 7, Ind.* Thermoshell electric heating elements for pipe, tube, and tank heating can be furnished in variety of shapes and sizes. They are available to heat to a temp of 2000 F, as well as at all lower temps from room temp on up. Bulletin provides details (Dec 16, p193).

RESISTANCE HEATER — *Electric Arc, Inc, 162 Jelliff Ave, Newark, NJ.* Model RTR6 Regulator is designed for multiple small-tube heating from 1½ to 2¾ in. Used in conjunction with pyrometer-controlling unit, it can control heating of 6 welds simultaneously (Jan 14, p185).



VACUUM ANNEALING FURNACE —*High Vacuum Equipment Corp, 2 Churchill Rd, Hingham, Mass.* Model F1212-2A is of double-pumped muffle type and has a hot zone of 6-in. OD by 12 in. long. It is capable of operating continuously at 2150 F or intermittently at 2200 F at a pressure of 1 x 10^{-4} mm Hg or less. Vacuum retort and cooling chamber are insulated and water cooled (Oct 21, p201).

CLEANING AND FINISHING



DEGREASING MACHINE — *Detrex Chemical Industries, Inc, Detroit, Mich.* Model 1DD750 rotary drum degreaser combines solvent degreasing with automated work handling to provide in-process cleaning, cleaning before heat treatment, cleaning before plating and dipping. Steam heated and measuring only 6 ft 6 in. wide and 6 ft high, and 4 ft in direction of work flow, unit handles 5 cu ft per hr with rated capacity of 2000 lb of steel or brass per hr (Oct 21, p211).

VAPOR DEGREASER—*Armstrong & White, Inc, Aircon Div, 101 Freeport Rd, ChesWick, Penna.* Improved Aircon Model 75 vapor degreaser has a working area of 38 x 22 in. and a vapor depth of 24 in., allowing a load cleaning capacity of 600 to 900 lb of steel per hr. Unit is suitable for trichlorethylene solvents, requiring 16 gal in boiling sump and 24 gal in storage. Water consumption is 30 gph (Aug 12, p174).

SAND-BLASTING MACHINE — *Air Placement Co, 1009 W 24 St, Kansas City, Mo.* Model B6 portable Jet-Blaster has 650-lb capacity, handles conventional abrasive materials, and has adjustable flow control. Nozzle for wet sand-blasting, and remote controls are available at additional cost (Aug 12, p190).

CLEANING MACHINE — *Cro-Plate Co, Inc, 747 Windsor St, Hartford 1, Conn.* Automatic conveyorized blasting machine, designed for organic abrasives, takes parts, indexes them in sequence through: compressed air blow-off cabinet for removal of moisture; blast cabinet where workholding fixtures are rotated under blast guns; secondary blow-off cabinet where residual abrasive grain is removed; then to a selective unloading device (Sep 9, p196).

PARTS WASHER—*Industrial Systems Co, Matawan, NJ.* Work parts from screw machines are delivered to washing unit, designated Model CT 6 x 3 WR, by conveyors. A metal mesh conveyor then carries them through sprays of heated detergent solution, followed by hot rinsing spray. Cleaned parts are discharged from delivery end of machine (Aug 26, p160).

HOT SPRAY UNIT—*Spee-Flo Co, 720 Polk, Houston, Texas.* Completely self contained, the Chieftain series combines the Spee-Flo hot spray heater and reciprocating pump in a portable unit which carries the original 5- or 10-gal paint container. The 600- and 900-series models are equipped with a 2-kw or a 3-kw heater and pump designed to spray up to 1 gpm. Also available is a 4-wheel unit which carries a 55-gal drum (Oct 21, p204).

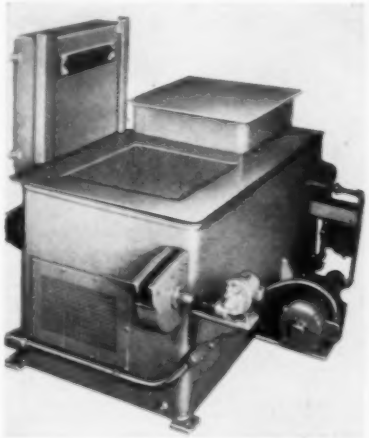
MULTI-BARREL FINISHER — *Rampe Mfg Co, 14915 Woodworth Ave, Cleveland 10, Ohio.* Model V-16 multi-barrel finishing unit, designed as heavy-duty unit for tumbling, burnishing, and deburring of flat washers, screwmachine parts, die castings, threaded bolts, and similar parts, features a variable-speed direct gear drive permitting speed adjustments from 8 to 25 rpm. Features include 6-cu-ft capacity, choice of 1 to 4-compartment barrels (Aug 12, p186).

STEAM CLEANERS—*Kelite Corp, 81 Industrial Rd, Berkeley Heights, NJ.* Each cleaner provides a positive displacement pump capable of delivering full rated output hundreds of feet from machine. Mark I, designed for light to medium duty, has output of 120 gpm. Mark II, for medium to heavy use, has 200-gph output. Mark III, with output of 300 gph, is designed for maximum duty. All are rated at 320 F (Oct 21, p218).

CLEANING UNIT — *Alvey-Ferguson Co, Dept AM, 1403 Disney St, Cincinnati 9, Ohio.* Cleaning, phosphate coating and drying machine, Siamese Twin Model CP, handles metal stampings. Machine uses overhead and wire mesh conveyors. Both conveyors use common tunnel, solution tanks, spray system and common headers for water and drains (Aug 26 p164).

CLEANING MACHINE—*Fuller Brush Co, Machine Div, Hartford 15, Conn.* Flat metal plates are cleaned on both sides in this scrubbing machine which uses cylindrical nylon brushes and a detergent solution. It is available in two versions: one has 8 sets of brushes and processes sheets at rate of 100 fpm; other has 3 sets of brushes and cleans at rate of 60 fpm. Both have width capacity of 38 in. Plates are scrubbed, rinsed, and dried (Nov 18, p204).

BUFFING PROCESS — *Grav-i-flow Corp, Sturgis, Mich.* Spin-Finish process finishes a multiple mounting of parts in a single, automatically timed operation. Designed for brass, zinc-base and aluminum die-cast parts, process has cycle times from 4 to 16 min (Mar 25, p204).



GEAR WASHER — *Gear-O-Mation Div, Michigan Tool Co, 17140 E 10 Mile Rd, E Detroit, Mich.* Gear washer can handle up to 1000 parts per hr, with parts being spray-washed and blown dry as they travel 4 ft through unit. Washer can be used for any production-line cleaning operation on relatively small parts (3-in. max in any direction) (Jan 14, p172).

CLEANING and FINISHING

CLEANING MACHINE — *Ransohoff, Inc. Hamilton, Ohio.* Drum and belt-conveyor-type cleaning machine cleans small works or parts and is adaptable to pickling, phosphating, or neutralizing. Small pieces are washed, rinsed, and dried in drum section; larger work or tote pans are processed in conveyor section at same time. Return conveyors allow one-man operation (May 20, p198).

FINISHING MACHINE—*Lewis Welding & Engineering Corp, Bedford, Ohio.* Designed to produce microscopically smooth finish on aircraft, missile and automotive components, this automatic machine features an automatic method of handling the parts during processing, and oscillating air-blasting guns which spray a liquid abrasive. Tests show that it works on a variety of materials including aluminum, copper, mild steel, stainless steel and titanium (Dec 30, p124).

HOT SAWDUST UNITS — *Speed-D-Burr Corp, 3613 San Fernando Rd, Glendale 4, Calif.* Drying and polishing units are available in three models (Deluxe, standard and economy) and may be had as barrel unit only, or as barrel unit with elevator with mechanical separator. Barrel is same for all models—heat jacketed, all welded construction, 24x24 in., 5-cu-ft capacity (Mar 11, p190).

WASHING MACHINE—*Alvey-Ferguson Co. Dept AM, 1203 Disney St, Cincinnati 9, Ohio.* Model A-F cabinet unit, equipped for automatically timed wash and rinse cycles, washes large, odd-size items. Unit is installed in pit at track level. Parts are loaded on specially designed trucks which are pushed into cabinet. Clearance will accommodate truck 4 ft wide by 6½ ft high and 10 ft long (May 20, p196).

MAGNETIC SEPARATOR — *Dings Magnetic Separator Co, 4740 W Electric Ave, Milwaukee 46, Wis.* Self-contained, portable magnetic separator, Model TBS, is designed primarily for tumbling barrel applications. Unit consists of a hopper with an adjustable gate, vibrating feeder, and a self-cleaning permanent alnico plate magnet, all mounted on a portable conveyor (Nov 18, p204).

PERFORATED STACKBOXES — *Stackbin Corp, 1139 Main St, Pawtucket, RI.* Boxes and bins can be used as containers for vapor or liquid degreasing, quenching, and similar dipping and cleansing operations. Line is available in four sizes from 7½ in. wide, 13 long, and 6 high to 15 in. wide, 19½ long, and 11 high. Perforations are on bottoms and sides; perforated ends optional (Oct 7, p180).

CLEANING MACHINE—*Wheelabrator Corp, Mishawaka, Ind.* Super Tumblast airless abrasive-blast cleaning machine for cleaning sand, scale and oxides from metals has operating load capacity of 14 cu ft. Operation and construction is similar to 28-cu-ft model previously described (AM—Jun 4 '56, p192) (Mar 25, p220).

FINISHING BARREL — *Abbott Ball Co, Hartford, Conn.* Barrel, for jobs requiring variable speeds, features 22 by 33-in. barrel of welded steel plate with capacity of 1200 lb. Available in single- or double-compartment units with or without neoprene linings, barrel operates at 7 to 30 rpm (May 20, p208).

CLEANING UNIT—*Pangborn Corp, Hagerstown, Md.* Small 4-ft Rotoblast table room is designed for cleaning operations on castings, forgings and stampings up to 48 in. dia and 24 in. high, as well as plastic and composition materials. Unit handles loads up to 4000 lb. An overhead wheel, powered by 10-hp motor, throws 15,000 lb of abrasive per hr. A 15-hp motor is available which will throw 22,000 lb per hr (Nov 4, p194).

TUMBLING BARRELS—*Rampe Mfg Co, 14915 Woodworth Ave, Cleveland 10, Ohio.* White-lined Mini-Tumbler barrels are lined with seamless vinyl plastic and are resistant to chemicals and abrasion. For bench use, barrels are available in open-conical or closed-barrel types, both suitable for steel-ball burnishing of small parts. Closed barrel measures 9 in. in dia by 3¼ in. deep (Jun 17, p219).

WET BLAST MACHINE—*Cro-Plate Co, Inc, 747 Windsor St, Hartford, Conn.* Machine is adaptable to deburring of small machined parts, satin-finishing of decorative pieces and jewelry, and stripping wire ends. Parts are processed two at a time. Masks may be fitted in work-loading bays for protection of areas not requiring blasting, or to achieve different degrees of blasting (Jul 1, p148).

PARTS CLEANER—*Sprague Devices, Inc, Michigan City, Ind.* Device called Air-Push Spragit works with any immersion cleaning fluid, and is quickly attached to cover of standard 5 or 10-gal metal container. Basket fits inside container and is agitated by rocker-arm assembly which is actuated by air pressure. Unit operates on as little as 12 lb of air, and will handle load of 75 lb at 60 psi. Stoke and cycle are adjustable (Jun 17, p232).

SPRAY BOOTH—*Craftools, Inc, 401 Broadway, New York 13, NY.* No. 2019 is self-contained unit that occupies space of 28 x 28 in. and is 60 in. high. Unit is equipped with enclosed 10-In. fan exhaust with self-closing butterfly damper, and has a glass-wool filter. Accessories include air filter and reglator (Mar 11, p211).

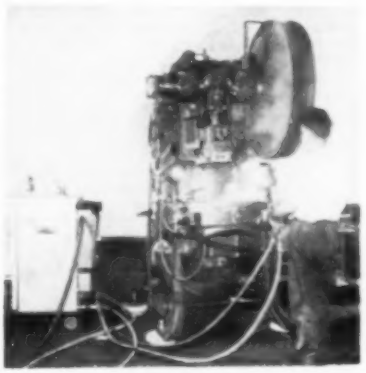
STEAM CLEANER—*Turco Products, Inc, 6135 S Central Ave, Los Angeles 1, Calif.* Steamerette is an injector unit that uses existing steam supplies for paint stripping, phosphating or sanitizing. It operates on 40 to 140-psi steam line, and has built-in pressure gage (May 20, p217).

CLEANER—*Homestead Valve Mfg Co, Coraopolis, Penna.* Series 4000 portable Hypressure Jenny gives any cleaning action ranging from 400 gal per hr of cold water at 450 psi up to mixture of steam, water, and cleaning compound at 325 F. Cleaner, offered in 7 models, is also available in stationary version. Electric-motor or gas-engine pumps are offered; fuel can be oil or gas (Mar 25, p214).

STEAM CLEANER—*Vapor Heating Corp, 6420 W Howard St, Chicago 31, Ill.* Model 45 consumes 1¼ gal of No. 1 fuel oil per hr to turn 45 gal of water per hr into an effective steam cleaning jet. A 1/3-hp 100-v motor, with overload cutoff, drives positive-displacement water pump. Fuel-oil tank reportedly holds enough for four hours of steady cleaning (Mar 25, p204).

PARTS CLEANER — *L & R Mfg Co, 577 Elm St, Arlington, NJ.* Unit consists of three jars containing cleaning, rinsing and finishing solutions; a drying chamber; and a motor-agitated basket for holding the work to be cleaned. Basket swivels about center-post and is immersed into series of jars. Machine measures 23 x 16½ x 17¼ in. and has 5½-in. ID basket (May 20, p195).

HOT SPRAY HEATER — *Spee-Flo Co, 720 Polk Ave, Houston, Texas.* Viscomatic hot spray heaters for all paint materials, feature Dial-a-Matic temperatures and viscosity control which can be adjusted even while unit is operating. Temperature control at any desired level between 90 and 180 F is accomplished with finger-tip control (Jun 17, p200).



STEAM CLEANER—*Pantex Mfg Co, PO Box 660, Pawtucket, RI.* Speedy-lectric Steam-Jet Cleaner has been improved to offer a 1/3 reduction in electric power demand and consumption. Normal operation consumes only 15-18 kw per hr. Unit is reported to be entirely free from fire and explosion hazard (Nov 4, p201).

CLEANERS—*Circo Equipment Co, 51 Terminal Ave, Clark, NJ.* Metal parts cleaners are available in three models: MPC-3 and MPC-4 are pneumatically operated, power agitation cleaners that are fully automatic and can be used cold or with steam, gas or electric; MPC-5 power-agitation cleaner is motor operated and is also available for cold, steam, or electric heat operation (May 20, p212).

ELECTRIC STEAM CLEANER — *Elroy Products Co, 529 S Seventh St, Minneapolis 15, Minn.* Polaris plugs into 110-v line, operates on one filling of water for about an hour, generates 90-max pressure. Model 12 has 3-gal capacity ,sells for $249.50. Model 24, equipped with rubber-tired wheels, holds 6 gal, is priced at $299.50 (Apr 8, p188).

BARREL PLATING MACHINE — *Hanson-Van Winkle-Munning Co, Church St, Matawan, NJ.* Unit offers variable cylinder-rotation speeds and centralized, one-man control. The Mercil-type barrels are driven by constant-tension V-belt and pulley arrangement that permits changing speed of cylinder rotation. Controls permit operator to select proper cycle for contents of barrel without leaving central station (Jul 15, p194).

STEAM CLEANER—*Clayton Manufacturing Co, El Monte, Calif.* Hydro Model S-809 requires only ⅜-in. valved steam outlet for power to pick up, mix, heat, and deliver cleaning solution in driving spray at rate of 190 gal per hr. Unit, operated by one valve, weighs 15-lb (Mar 25, p222).

CLEANING TANK ACCESSORY — *Pangborn Corp, Hagerstown, Md.* Sluriator is designed to prevent solid packing of abrasive at bottom of Hydro-Finish cleaning unit tank after overnight shutdowns. Agitating air strongly sweeps tank bottom and spirals through body of the liquid to provide rapid and thorough agitation (Nov 4, p192).

PIGGY-BACK STAND—*Rampe Manufacturing Co, 11915 Woodworth Ave, Cleveland 10, Ohio.* Two legs of stand bolt to frame of Rampe screen separator to support tumbling unit in position to unload into the separator (Feb 11, p182).

CLEANING MACHINE — *Magnus Chemical Co, Inc, Garwood, NJ.* The Miji-Lif mechanically agitated cleaning machine, designed for batch cleaning of all types of metal, glass, and plastic parts in solvents, mild acids, and alkalies, handles loads up to 75 lb. This machine can also be used for applying protective coatings to metal parts. Entire operation is done with compressed air (Oct 7, p176).

SANDBLAST CABINET — *Cyclone Sandblast Equipment, 48 Clara St, San Francisco, Calif.* Sandblasting cabinet may be used either with its adjustable-mounted blast unit or with trigger-controlled hand blast gun which is optional equipment. Mounted blast unit may be raised or lowered to suit workpiece. Blast action of mounted unit is controlled by stop-start foot valve (May 20, p204).

BUFFING COMPOUND APPLICATOR—*George L Nankervis Co, 15300 Fullerton Ave, Detroit 27, Mich.* Model 1006 can apply 10 in. of compound without resetting or adjustment. Lightweight construction (less than 24 lb) permits installation on floating heads without disturbing balance. Unit can feed any number of strokes per min. Rate of feed is adjustable from 0.0015 to 0.015 in. per stroke (Mar 11, p186).

ULTRASONIC TRANSDUCERS — *Acoustica Associates, Inc, Glenwood Landing, LI, NY.* Units are designed for high temperature environment (irradiating high temperature solutions, degassing molten metals), for developing high amplitude ultrasonic motion (drilling, grinding, particle disintegration), and other industrial applications (Jun 3, p171).

UTRASONIC PROCESSING TANKS —*General Ultrasonics Co, 67 Mulberry St, Hartford 3, Conn.* New 5- and 8-gal Sonitanks are designed for cleaning, degreasing, pickling, and electroplating operations. The 5-gal model, designated T-5, operates with the Model GU420 400-watt 20-kc generator. The T-8 tank uses a Model GU720 700-watt 20-kc generator. Chambers are made of type-302 stainless and are equipped with inlet and outlet drains (Oct 21, p203).

ULTRASONIC DEGREASER—*Ramco Equipment Corp, Div of Randall Mfg Co, Inc, 1373 Lafayette Ave, New York 59, NY.* Model DV-18 cleans small parts including bearings, instrument parts, tools and dies, and valves. Work area is 9 x 9 x 6 in. high with capacity of 100 lb per hr. Unit comes complete with all accessory equipment (Jul 15, p188).

ULTRASONIC TRANSDUCER—*General Ultrasonics Co, Hartford, Conn.* D152 Sonicell, of all-welded stainless-steel design, provides 52 sq in. of radiating area for tanks and vats. Method employed to couple and reinforce the crystal transducers is said to result in nearly 90% conversion of energy and to provide exceptional ruggedness and long life (Mar 25, p220).

CLEANING UNIT—*Dist by John B Moore Corp, Nutley, NJ.* Designed for conveyor operations, tank-mounted magnetostrictive-type cleaner is used with company's Electrosonic Generator, and permits ultrasonic cleaning of larger objects or a greater number of small objects. Unit is built by Telephonics Corp (Mar 11, p175).

ULTRASONIC CLEANER — *Gulton Industries, Inc, Vibro-Ceramics Division, 212 Durham Ave, Metuchen, NJ.* Glennite U-102 operates on 40 to 44 kc, has a forced air cooling system, and cleaning tank capacity of 1 gal. Circulating pump, permanent filter element, and additional tank for recirculating the fluid eliminates manual draining and filtering (Oct 7, p178).

ULTRASONIC CLEANERS — *Circo Equipment Co, Clark (Rahway), NJ.* Circosonic machines, offered in seven sizes, are welded from heavy-gage, steel zinc-metallized; or stainless-clad steel. Transducers are frame mounted and positioned for max effectiveness (June 17, p152).

ULTRASONIC CLEANING GENERATOR—*Branson Ultrasonic Corp, 40 Brown House Rd, Stamford, Conn.* Sonogen AP-25-B is designed for use with company's standard tank-type or all-welded stainless steel immersible transducers. Rated r-f output of the 10 x 16 x 12-in.-deep generator is 125 watts (avg), with peak power on pulses of 500 watts. As matching unit, company recommends a tank 6½ x 8 x 10 in. high with an effective cleaning area of 52 sq in. (Nov 18, p204).

ULTRASONIC CLEANING TANK—*Branson Ultrasonic Corp, 40 Brown House Rd, Stamford, Conn.* Model S-1080 stainless steel tank is designed for conveyorization or for cleaning of long items such as pipe. The tank is 10 ft long, 9 in. wide, 18 in. deep, has a working fluid volume of 75 gal of solution, and 16 type B-36 transducers which give an effective cleaning area of 96 x 7½ in. (May 20, p193).

ULTRASONIC CLEANING UNIT — *Branson Ultrasonic Corp, 40 Brown House Rd, Stamford, Conn.* Self-contained Model R-50 includes heater, temperature control, filtration and recirculation system in addition to the generating equipment. The 6 x 16 x 11-in.-deep tank has a working volume of 5 gallons. Transducers, mounted to bottom, have rated input of 250 r-f watt average (1 kw peak) which they convert to 38-kc mechanical vibrations (Oct 21, p202).

ULTRASONIC TRANSDUCER — *Gulton Industries, Inc, 212 Durham Ave, Metuchen, NJ.* Model UT-2-42 is sealed in stainless steel housing and is completely immersible in solvents, mild alkalis and acids, and normal detergent solutions. It uses Glennite piezoelectric ceramics and is designed to give non-focusing, uniform field over large areas for cleaning, degreasing, and processing (Sep 23, p207).

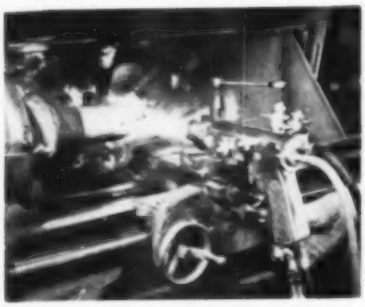
ULTRASONIC TRANSDUCERS — *Massa Laboratories, Inc, Hingham, Mass.* Ultrasonic transducers, type M-203B, are lowcost, high-power units designed for industrial cleaning and degreasing operations. They can operate continuously with 400w input power; conversion efficiency is 40%. Overall dimensions are 4⅜ in. dia x 4⅞ in. long. Mounting flange has six holes for attaching unit to tank (Nov 4, p204).

VACUUM METALLIZER—*F J Stokes Corp, Vacuum Equipment Div, 5500 Tabor Rd, Philadelphia 20, Penna.* Model 427 72-in. vacuum-metallizing unit has been redesigned to provide faster evacuation of chamber, with resulting shorter metallizing cycles and greater productivity. Model has two 16-in. "Ring-Jet" diffusion pumps of greater capacity than former design (Apr 22, p198).

CLEANING and FINISHING

METALLIZING GUN—*Metallizing Co of America, 3520 W Carroll Ave, Chicago 24, Ill.* Designed to apply Norton Rokide protective coatings, oxyacetylene gun reduces metal rod to molten particles at temperatures in excess of 5000 F, and projects molten particles at high velocity by compressed air onto metal surface to be coated (May 20, p195).

VACUUM METALLIZER — *NRC Equipment Corp, Subsidiary of National Research Corp, 160 Charlemont St, Newton Highlands 61, Mass.* Model 3143 is recommended where volume of work is insufficient to immediately utilize capacity of a large production coater. Unit comprises a 5-ft long, 42-in.-dia horizontal coating chamber which provides 12,000 sq in. of coating capacity per load. Unit will process three to five batches per hr (Oct 21, p203).



METAL SPRAY UNIT—*Wall Colmonoy Corp, 19345 John R St, Detroit 3, Mich.* C-2 Spraywelder, designed to apply hard-facing powders to most types of steel (including stainless), cast iron and copper parts, features improved metal flow rates and higher deposit efficiency. Unit consists of aluminum pistol, hopper, carburetor, air regulator-filter, hoses and fittings (Feb 11, p166).

BURNISHING COMPOUND — *Oakite Products, Inc, 124 Rector St, New York 6, NY.* FM-103 produces smoother, brighter finish on aluminum, copper, brass, nickel-silver, gold, and mild and hardened steel. Designed for use with barrel finishing media or with self-tumbling work, material is used in concentrations of 1 to 2 oz per gal of water (Jul 29, p164).

DESCALING PROCESS—*Turco Products, Inc, 6135 S Central Ave, Los Angeles 1, Calif.* Process for descaling 17-7PH stainless after transformation hardening permits removal of oxides without such adverse effects as excessive hydrogen contamination and intergranular attack, badly roughened or over-etched surfaces. Solutions cause metal loss of approx 0.0002 in. per side (Jun 3, p164).

ALL-PURPOSE DETERGENT — *Kelite Corp, 81 Industrial Rd, Berkely Heights, NJ.* Kelite A-P-C, a concentrated, powdered product used in mixtures of ½ to 4 oz to a gallon of water, can be used on all surfaces, including aluminum and painted, and is said not to be harmful to the hands (Nov 18, p220).

DEGREASING COMPOUND—*Parke-Hill Chemical Corp, Development Dept, 29 Bertel Ave, Mount Vernon, NY.* Water emulsifiable Grease Ban can be used either full strength or diluted with kerosene, and is washed off with water without leaving an oil film. In addition to degreasing metal parts, it is useful for cleaning concrete and glass and, because of disinfectant properties, as a general plant cleaner (Dec 16, p184).

CORROSION REMOVER — *Oakite Products, Inc, 124 Rector St, New York 6, NY.* Drycid is powdered acid material which removes rust, scale and corrosion with greater safety to metal surface. Added to water in concentrations upwards of 8 oz to gal, material is applied by circulation or immersion, and can be used cold or, for faster action, heated to 165 F Jun 3, p180).

SOLVENT—*London Chemical Co, Inc, Dept AMN, 1535 North 31st Ave, Melrose Park, Ill.* Selective solvent called Sonic-Solve 113, for use in ultrasonic cleaning equipment, removes contaminants without affecting plastics, decals, numbers, insulating varnishes, etc. Liquid is completely safe and stable for use with electronic cleaning equipment (Nov 4, p201).

BURNISHING COMPOUND — *Esbec Barrel Finishing Corp, 18 Beech St, Byram, Conn.* Esbec No. 203, for use on aluminum, zinc and copper alloys, steel, and stainless, reportedly produces progressively better results in time cycles up to 24 hours. Product can be used for "cut and color" operations where deburring and burnishing is done in one operation in aluminum oxide media (Dec 2, p174).

FINISH STRIPPER — *Beck Equipment Co, 3350 W 137th St, Cleveland 11, Ohio.* Epoxystrip removes paint, lacquer, enamel and many other finishers from metal surfaces. Manufacturer claims material will, if applied properly, outstrip any other product now on market, without removing or damaging bonderizing or phosphate coating (Jul 1, p158).

EPON STRIPPER—*Oakite Products, Inc, 124 Rector St, New York 6, NY.* Oakite Stripper S-A is solvent-acid compound designed to strip high grade epons and other tough finishes from metals. Inhibited for safety on all metals except magnesium, material also removes light rust, scale, and smut deposits. It is used at room temperature at full strength; parts are rinsed in water (Jun 3, p170).

LIQUID DETERGENT—*Oakite Products, Inc, 124 Rector St, New York 6, NY.* Oakite Liqui-Det is concentrated general-purpose cleaner. It is reported to go into solution instantly and to be effective in both hot and cold, hard and soft water. Concentrations as low as ¼ oz to one gal of water are used (Feb 11, p188).

SAFETY SOLVENT—*Penetone Co, Box 6AM-3, Tenafly, N. J.* In addition to degreasing, Antiox Type R deposits a protective coating to inhibit corrosion and rust. Coating is colorless, dry, non-tacky, transparent, and non-toxic according to manufacturer (Apr 22, p212).

CLEANING MATERIALS — *Oakite Products, Inc, 19 Rector St, New York 6, NY.* New materials include a nonfoaming alkaline detergent to remove identification inks from aluminum, a barrel burnishing compound to produce superior color and luster, a powdered acid scale and rust remover; a solvent acid stripper that removes epoxy resins at room temperature, and a zinc phosphating compound for low temperature applications (Oct 21, p202).

CLEANING AGENT—*Oakite Products, 124 Rector St, New York 6, NY.* Aluminum cleaner 164 is specially compounded to clean without foaming in agitated tanks. It removes identification inks, grease, and heavy soils (May 20, p214).

DEGREASER SPRAY—*Stewart-Hall Chemical Corp, PO Box 66Z, Mt Vernon, NY.* Zipp removes grease, oil, carbon and gums from machinery. Spray parts to be cleaned and within minute they can be wiped or rinsed clean. Spray is non-corrosive, non-flammable, does not contain carbon tetrachloride. Available in 16-oz cans (Apr 22, p212).

WASH CONCENTRATE — *Meriz Chemical Co, 1021 E 55th St, Chicago 15, Ill.* Concentrate for cleaning metal, plastic, and aircraft bodies is added to water at rate of 1 gal to 100 gal of water. Said to be fast drying and drop-free, non-flammable product readies articles for high-luster painting (Jun 17, p227).

LIQUID RUST REMOVER — *Harlan Products, Inc, P O Box 66, Cheltenham, Penna.* Material de-rusts tools, dies, jigs, wire and other ferrous metal products where a bright finish is not needed. Chemical action dissolves rust film, but stops when iron or steel surface is reached (Mar 11, p211).

DESCALING PROCESS—*Turco Products, Inc, 6135 S Central Ave, Los Angeles 1, Calif.* Process reportedly descales titanium and its alloys without adversely affecting the physical and chemical properties of metal. Relatively low temperatures (270-280 F) are needed, and low metal loss, 0.0001 and 0.0003 in. per side, is reported (Mar 25, p204).

SYNTHETIC DETERGENT—*Conversion Chemical Corp, Rockville, Conn.* Kenvert Sluff-Off removes buffing compounds from ferrous or nonferrous metals; compound is said to slough off in sheets. Product, to be used in steel tanks with steel coils, is furnished in 5-gal pails (Apr 8, p202).

INSTRUMENT CLEANING SOLUTION—*L & R Manufacturing Co, 577 Elm St, Arlington, NJ.* Power Nofome is designed for cleaning delicate and intricate metal parts and components. Flash point is 100 F. L & R rinsing solution, used as follow-up dissolves cleaner, gives brilliant finish to parts (Apr 8, p210).

ALUMINUM ETCHANT—*Hanson-Van Winkle-Munning Co, Matawan, NJ.* 85S aluminum cleaner, developed for use as caustic etchant bath, contains an inhibitor which reportedly prevents formation of scale on coils and tank walls (Feb 25, p198).

COLD DEGREASING SOLVENT—*Octogon Process Inc, 23 Bank St, Staten Island 1, NY.* Klearall 95, based on new formulation, gives better degreasing action, increased recovery rate, and high stability. Used in conveyorized cold degreasing operations or in single dip tanks, solvent requires no rinses, leaves no oily residue, is nonexplosive and non-corrosive (Apr 8, p208).

SAFETY SOLVENT—*National Disinfectant Co, 2417 Commerce St, Dallas, Tex.* SS-25 is recommended for cleaning and degreasing motors, mechanical parts and equipment, and electronic components. It has no flash at the boiling point, is corrosion free, leaves no residue, and is said to be about 25 times safer than carbon tetrachloride (Aug 12, p178).

LIQUID DETERGENT—*Acoustica Associates, Inc, Dept 715, 26 Windsor Ave, Mineola, NY.* Cleaner No. 715 for use on such hard-to-clean objects as lenses, precision parts, ball bearings, etc, is said to accelerate removal of soils in far less time than present solutions. Water-based product is suitable for use with all types of ultrasonic cleaning system (Dec 16, p192).

CLEANING BATH ADDITIVE — *Northwest Chemical Co, 9300 Roselawn Ave, Detroit 4, Mich.* Alkontrol additive replaces commonly-used sodium hydrosulphite in metal cleaning and cyanide copper baths. Material permanently reduces troublesome hexavalent forms of chrome to harmless ones. Material is added to cleaning baths at rate of ¼ oz per gal (Nov 4, p203).

FREON SOLVENTS—*E I Du Pont de Nemours & Co, Wilmington, Del.* Solvents remove oil, grease, and dirt without harming delicate metal parts or electrical insulation, yet are safe enough to be used in ordinary work areas. Available in three types: Freon MF, with a 75 F boiling point; Freon BF, which boils at 199 F; and Freon TF, which boils at 118 F (Apr 22, p214).

BARREL FINISHING COMPOUND—*Esbec Barrel Finishing Corp, 18 Beech St, Byram, Conn.* Esbec 234 will remove rust, oxide stains, and light heat-treat scale; recondition steel burnishing media; and remove the film left after long runs in aluminum oxide chips in preparation for burnishing. Only 2 or 3 oz of powder are required per gal of water (Aug 26, p182).

ABRASIVE—*Norton Co, Worcester 6, Mass.* Barrel finishing abrasive called Tumblex S comes in form of abrasive spheres. Spheres are made of Alundum aluminum oxide abrasive, and are suited for finishing of intricate shapes. Parts may be sent to company's Sample Processing Lab for testing (Apr 8, p209).

ALUMINUM PAINT — *Alumatone Corp, Grande Vista and E Pico, Los Angeles, Calif.* Ready-mixed aluminum paint, Alumatone 100, is formulated for assembly lines requiring extremely fast drying paint films. Material dries in 3 min with minimum smudging. It has superior adhesion to metals, plastics, glass, rubber and wood. Coverage is 650 sq ft per gal (Oct 7, p194).

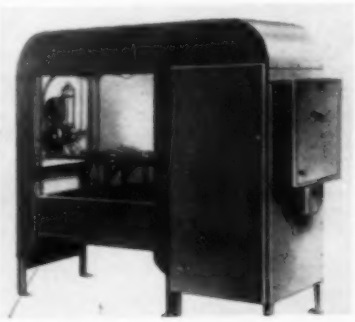
PAINTING PROCESS—*Arco Co, 7301 Bessemer Ave, Cleveland 27, Ohio.* Two-coat paint system provides better pitting and corrosion resistance than galvanized coating on steel. Formulated for air conditioning manufacturers, but also suitable for other steel equipment, paint is available in variety of colors. A baking operation is required (Oct 7, p196).

ALUMINUM PAINT—*T J Ronan Co, 749 E 135th St, New York 54, NY.* Paint, called Non Smudge, dries overnight to a surface-fast finish. Product may be applied by brush, spray, or roller (Dec 2, p170).

MAGNESIUM FINISHING — *Turco Products, Inc, 6135 S Central Ave, Los Angeles 1, Calif.* Turcoat 4245-2F and 4091, designed to replace Dow 17 and 18 processes, provide corrosion resistance, paint-base qualities, and abrasion resistance to all forms and alloys of magnesium (May 6, p180).

GALVANIZING MATERIAL—*Danton Corp, 339 Auburn St, Auburndale 66, Mass.* Galvoplate can be applied cold with either brush or spray gun to any clean metal surface. In areas where corrosion has already started it is only necessary to remove loose scale before application. Product is packaged premixed in 1-gal containers (Apr 22, p217).

HEAT-RESISTANT PAINTS — *Chem Industrial Co, 3784 Ridge Rd, Brooklyn 9, Ohio.* C-I Extra-High paints are available in gold, metallic red, and metallic blue, in addition to original aluminum. All resist temperatures up to 1700 F without flaking, blistering or burning. Product air-dries to a bright finish in approximately 30 min; can be applied by brush or spray gun (Oct 7, p198).



DEBURRING MACHINE — *Metal Parts Sales Co, 165 Delancey St, Newark, NJ.* Unit, called Reciprotron, is designed for deburring, polishing, micro-inch finishing, and generating radii on machined parts. Reciprocating racks hold parts. Pan containing abrasive or polishing media and solution rises to submerge parts for predetermined running cycle (Aug 26, p164).

SCRAPER—*Roto-Scraper Co, Dept 70, 2960 W Valley Blvd, Alhambra, Calif.* Roto-Scraper removes paint, mill scale, and rust from metal surfaces prior to finishing. Tool weighs only 2½ lb, costs $39.50 (Apr 22, p188).

BUFFING LATHE—*Hammond Machinery Builders, Inc, 1618 Douglas Ave, Kalamazoo, Mich.* Model VRO variable-speed polishing and buffing lathe now features a braking bar that can be actuated from either side of machine. Spindle speed, infinitely adjustable between 1500 and 3000 rpm, is changed by turning speed dial mounted on top of machine (Mar 25, p189).

ABRASIVE BELT MACHINE—*Timesaver Sanders, PO Box 7446, Robbinsdale Station, Minneapolis 22, Minn.* Speedbelt 12 is designed for deburring, polishing or finishing of small metal, wood or plastic parts. Unit is available with three types of feed tables. Positive feed adjustment can be made for any material up to 2 in. thick. Machine is also available with an 18-in.-wide belt (Dec 30, p142).

POLISHING PADS — *Behr-Manning Co, Troy, NY.* Mushroom shaped molded rubber pad and coated abrasive disks are designed for grinding and polishing in small radii or difficult contours. Disks are made of cloth in grits 120-X, 80-X and 50-X. The 5 and 8-in. dia pads are made in proper density for polishing; a third mushroom, also 5-in. dia, is made for stock removal. All may be used on any portable pneumatic or electric grinder (Nov 18, p210).

SPEEDSANDER — *Timesavers, Inc, Box 7446, Robbinsdale Station, Minneapolis 22, Minn.* Model SPL for wood sanding or metal finishing has 34-in. feeding height which permits it to fit into any production setup of conveyorized finishing line. Unit has automatic belt tracking; feed speeds up to 100 fpm, higher if required. Model is available in 24, 40, 50, and 60-in. widths (Aug 26, p168).

ABRASIVE WHEEL — *Merit Products, Inc, 3691 Lenawee Ave, Los Angeles 16, Calif.* Abrasive wheel composed of narrow finger-like abrasive strips is said to exert more exact control in working complex contours and curvatures without flatting or digging. Primarily useful in polishing, deburring and removal of surface flaws on metals, wheels are available in a complete grit range in diameters of 14 and 16 in. and in variety of widths from 3 to 60 in. (Nov 18, p208).

VERTICAL DEBURRING MACHINE —*Model Machine Co. Inc, 4729 Hawthorne St, Philadelphia 24, Penna.* Air-operated machine can deburr both sides of holes in flat and thin sections. After top spindle has finished one side, it retracts and bottom spindle then deburrs other side. On thicker sections both spindles operate at same time. Holes 1/32 to ½-in. dia can be deburred (Nov 4, p190).

DEBURRING MACHINE—*Distributed by Hammond Machinery Builders, Inc, 1618 Douglas Ave, Kalamazoo, Mich.* Morrisflex Model MA-660 semi-automatic machine is designed for use with a polishing lathe and wire brushes to deburr gears, splines and serrated parts. Rotation of work, constant pressure against brushes, and dwell time are all controlled by machine. Machine is made by B O Morris, Ltd, Coventry, England (Dec 2, p166).

CLEANING and FINISHING

ORBITAL SANDER—*Sunstrand Machine Tool Co, Pneumatic Div, Rockford, Ill.* Model 800 weighs 3 lb, fits into palm of hand. Unit, designed for rough sanding and preliminary operations, takes 3 x 8-in. sheets of sandpaper (Jan 14, p170).

CONTACT WHEEL—*Chicago Rubber Co, 651 Market St, Waukegan, Ill.* Type X wheel is made of new 3M neoprene and features wider-than-usual lands providing more rubber surface. Wheel, designed for abrasive belt use, is available in 14-in. dia with 1, 2, and 3-in. face widths and in several durometers (Apr 22, p220).

RUBBER CONTACT WHEELS—*Chicago Rubber Co, Inc, Waukegan, Ill.* Type R-58 wheels are designed for use with abrasive belt finishers. Wheels shape themselves to contours of the workpiece, and are reported to increase belt life up to 200%. Wheels are available in a variety of durometers and are 1 in. in width. They are replaced with a 10% trade-in allowance when worn (Nov 18, p219).

BRIGHTENING POWDER—*Conversion Chemical Corporation, Rockville, Conn.* Material gives mirror-bright, iridescent-free surface on zinc plate with one dip. Kenvert 16 operates in range from 90 to 110 F and requires no ventilation. Process offers corrosion protection and resistance to staining and fingerprints (Feb 11, p184).

FLUIDIZERS—*American Agile Corp, P O Box 168, Bedford, Ohio.* Dip coating of irregularly-shaped targets has been simplified by custom-made units in square, cylindrical and rectangular shapes. Units come in sizes from 15 in. dia and 6 ft deep in powder bed, to 4 x 4 ft and 40 in. deep in powder bed (Mar 25, p208).

TEMPERATURE REGULATOR — *Robertshaw-Fulton Controls Co, Fulton Sylphon Div, Box 400, Knoxville, Tenn.* Model PA-2 is designed to provide accurate temperature regulation in plating, bonderizing, anodizing, cleaning, pickling, and rinsing solutions. Model is available in seven valve sizes from ¼ to 1½ in.; several bulb sizes are available. Descriptive brochure contains application data (Nov 4, p196).

INDEXING DIP UNIT—*Cincinnati Cleaning and Finishing Machinery Co, Hageman St, Cincinnati 4, Ohio.* Machine permits use of shorter dip tanks for multi-stage finishing operations. It dips baskets of parts into a series of tanks as baskets travel suspended from closed-loop monorail conveyor. Operation is automatic, from first dip through conveyor unloading. Unit can be adapted to any finishing requirements (Oct 21, p216).

ABRASIVE TOOLS—*Skil Corp, 5033 Elston Ave, Chicago 30, Ill.* Permagrit T-C abrasive in fabricated by brazing tungsten-carbide grits on steel. Six types of tools are now available: toothless circular-saw blades, grit shoe for powered orbital sanders, hand sanders, grit files, and grit sleeves and rods for spindle sanders (Sep 23, p186).

PLATING SOLUTION—*Metals & Controls Corp, General Plate Div, Attleboro, Mass.* Rhodium plating solution provides base metal with an unusually hard, brilliant, platinum-colored metal finish. Scale on each container assures accurate measuring of the liquid content (Dec 2, p174).

BARREL PLATING CYLINDER—*Hanson - Van Winkle - Munning Co, Church St, Matawan, NJ.* Cylinder is driven by standard cogged V-belts, is designed for total submersion during plating process, and is available in Plexiglas, Melamine, and Tempron. It can be interchanged with all types of Mercil equipment (Mar 25, p224).

CHROMATE COATING — *Conversion Chemical Corp, Rockville, Conn.* Powdered chromate coating designated Kenvert 18, for producing iridescent films on zinc, cadmium, copper, brass, and zinc die castings, may be adjusted to give varying bronze shades by varying pH, concentration, and immersion time (Sep 23, p210).

NICKEL-ALLOY CLADDING — *Tube Reducing Corp, Wallington, NJ.* Nickel-alloy coating, designated Niphos, is easily applied to ferrous metal parts of all sizes and shapes. After application, material is heated in reducing atmosphere to provide a cladding which will not peel or flake. Clad coating can be applied locally as a brazing alloy (Aug 12, p163).

COATING UNIT — *American Agile Corp, 5461 Dunham Rd, Maple Heights, Ohio.* Mark III is mobile and can be used for both dip coating and spray coating of polyethylene powders to metal. It has metal reservoir hopper 15 in. in dia and 24 in. deep in the powder bed. When used for dip coating, nylon and fluorcarbons can be applied by unit (Feb 25, p214).

CATHODE ROD AGITATORS—*Randall Mfg Co, Inc, 1373 Lafayette Ave, New York 59, NY.* Agitators clamp on electroplating tank and eliminate need for stands or brackets. Available in single or double-rod models, agitators are said to double tank capacity, permit plating at higher currents, prevent burning, throw off gas bubbles, and give brighter deposits (Sep 23, p206).

BRIGHTENER—*Conversion Chemical Corp, Rockville, Conn.* Single-dip brightener, Kenvert 27, is designed to passivate and give uniform appearance with brightness to cadmium-plated work where brighteners are used in bath. No special ventilation is required for its use, and it operates from 65 to 75 F in manual or automatic cycles Apr 8, p208).

ZINC ADDITIVE—*Wagner Bros, Inc, 435 Midland Ave, Detroit 3, Mich.* Iso-Brite ZB 567, for barrel and rack plating operations, is said to produce bright, fine-grained deposits on metal parts. Original charge of 1 lb per 100 gal of purified zinc solution is said to give excellent results; about 2 to 4 oz per 100 gal per day will maintain brightness (Oct 7, p188).

PLATING UNIT—*Frederic B Stevens Inc, 1800 Eighteenth St, Detroit 16, Mich.* Little Steve production plating unit measures 7 ft wide, 32 in. high, and 10 ft or more long. Zinc plating of small parts is carried on at rate exceeding 100,000 parts per day. Unit is also suited for anodizing and other electro-chemical immersion processes (Mar 11, p182).

ZINC BRIGHTENER — *Smoothex Corp, 10705 Briggs Rd, Cleveland 11, Ohio.* Zinc-Kote is added to bath and produces brilliant zinc deposits on entire surface of all parts being plated. Plating current ranges from 60 to 90 amps per sq ft, depending on type of work. Because plating is done in bath, no dipping is required (Jun 3, p180).

PLATING-SOLUTION FILTER — *Hanson-Van Winkle-Munning Co, Matawan, NJ.* Compact plating solution filter, designated Dincalux, has a capacity of up to 900 gph free low (or about 600 gph with carbon charge). Unit measures 15 x 15 x 28 in., yet has 3.5 sq ft of filter area provided by 16 Perspex plastic plates. It may be used for intermittent or constant filtering or transfer pumping (Nov 4, p196).

PLASTIC BALLS— *Cosom Industries, Inc, 6012 Wayzata Blvd, Minneapolis 16, Minn.* Go-Mist balls, molded from Bakelite polyethylene, are used to smother corrosive and noxious fumes rising from plating tanks. Effective blanket of these balls, about 55 per sq ft, prevents gas bubbles from rising to surface where they normally burst, producing corrosive mist (Feb 25, p194).

BRIGHTENING AGENT—*Allied Research Products, Inc, 4004-06 E Monument St, Baltimore 5, Md.* ARP 52, a zinc barrel brightener available in powdered form, and ARP 41, a liquid brightener for cadmium, are reported to produce lustrous deposits at lower costs (Mar 11, p180).

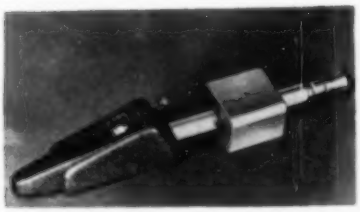
GERMANIUM RECTIFIER—*Hanson-Van Winkle-Munning Co, Church St, Matawan, NJ.* Designed for electroplating, anodizing, and related processing, Powertron rectifier is offered in self-contained models with ratings of 750, 1500, and 3000 amps. Voltage range extends from 2 to 12. Models are priced at $995, $1450, and $2595 (Feb 25, p202).

PRE-PLATING PREPARATION — *Enthone, Inc, 442 Elm St, New Haven, Conn.* First process, designated Enbond Z, for treatment of zinc-base die castings, utilizes an anodic electrocleaner and acidic activator to produce active surface ready for copper plating operations. Second process, Enbond BR, prepares brass and other copper alloys for any type of electrodeposit (Sep 23, p198).

CHROME REMOVAL PROCESS — *MacDermid Inc, Waterbury, Conn.* Process which removes chromium from copper plating baths is available for use with company's Rocheltex copper, standard bright copper, and high-speed Z/T bright copper baths. Additive chemicals do not accumulate to form bivalent copper or create side effects (Jun 3, p168).

INSPECTION AND LAYOUT

INTERNAL MICROMETER—*Brown & Sharpe Mfg Co, Providence, RI.* Intrimik internal tri-point micrometer is adjustable over a wide range of sizes. Three measuring points make line contact with the surface, so that the tool aligns itself axially and radially. Tools are furnished as individual units or in sets with overall ranges of from 0.275 to 8.000 in. (Nov 18, p194).



SURFACE ROUGHNESS GAGE—*Williamson Development Co, Inc, 317 Main St, West Concord, Mass.* Mechanical instrument, known as RoDi (Roughness Operated Displacement Integrator), is drawn over surface to measure roughness. Diamond point traces out high and lows relative to carboloy skid. Motion of point is transferred to integrating device which sums up vertical travels and shows total on dial. Reading is averaged over distance travelled (Jul 1, p140).

SCALE—*C-Thru Ruler Co, 827 Windsor St, Hartford, Conn.* 12-in. rule, with metal reinforcements at each end, and slotted openings, is available as architects' Scalemaster, with 14 scales and engineers' Scalemaster, with 9 scales (Jun 3, p172).

MEASURING SCALE—*Elliott-Myers Corp, 83 Hammond Rd, Warren, Penna.* EM scale is available in lengths up to 12 in. and is subdivided into increments of 0.001 in. Accuracy of scale is within 0.0001 in. Simple microscope is used to view scale and to make close readings possible (Jan 14, p185).

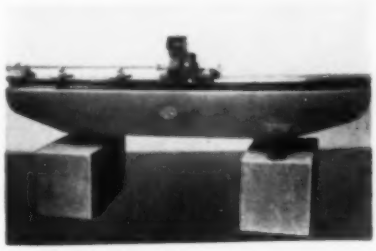
BORE GAGE—*American Gauge Corp, 375 Bloomfield Ave, Verona, NJ.* Opto-Mike is inserted with measuring anvil retracted; anvil is released and Opto-Mike is swept once a few degrees; instrument is withdrawn and measurement is read on 23-power optical vernier. Device is available in sets for measurements from 0.800 to 6.000 in. (Jul 15, p192).

ROTARY TABLE PILOTOR—*Micrometrical Manufacturing Co, 545 S Main St, Ann Arbor, Mich.* Type PE is designed to measure surface roughness of concentric diameters on flat surfaces. Unit will accommodate a wide range of parts. Typical applications include measurement of refrigerator seals and valve seats. Pilotors for most applications are available on request (Oct 7, p166).

VERNIER CALIPER—*L S Starrett Co, Athol, Mass.* Master-Vernier caliper, No. 123, has long 50-division vernier scales with widely spaced graduations which simplify setting and reading without magnifier. Open-face design permits placing both inside and outside vernier scales on same side of tool. Gage is available in 12-in. and 24-in. sizes graduated to 0.001 in. to read the full length (Apr 8, p200).

INTERNAL MEASURING INSTRUMENT—*Sheffield Corp, Dayton 1, Ohio.* Model N-7 is designed for inspecting internal diameters of ring gages and other parts for size, taper, bell-mouth and out-of-roundness. Capacity is from 0.380 to 12 in. with vertical capacity of 1½ in. Special gaging arms will give gaging range of 0.240 to 12 in. with vertical capacity to 1 in. (Apr 8, p200).

JOB RODS—*Cleereman Machine Tool Corp, 555 W Washington Blvd, Chicago 6, Ill.* Rods for use with company's Layout Drilling Machine greatly extend the range of the machine and simplify locating, drilling and boring. Each rod is bored with ¼-in. holes at locations corresponding to hole spacing on workpiece. As a hole is finished, pin is moved to next hole and the table positioned to next location (Dec 16, p192).



MEASURING MACHINES—*Distributed by Engis Equipment Co, 431 S Dearborn St, Chicago 5, Ill.* Watts machines give measurements of lengths and diameters beyond size capacity of practical gage blocks. Type A, for lengths from 80 to 120 in., consists of measuring head which contains 4-in. glass scale with projector reading directly to 0.00005 in., and repeating to setting accuracy of 0.00001 in. Type B measures to 0.0001 in. at 30 ft (May 20, p254).

LEAD MEASURER—*Sheffield Corp, Dayton 1, Ohio.* Leadcheck for detecting lead error in straight and tapered work and rack teeth is available with dirt-free dual electronic amplification of either 1000/2000 or 2500/5000 to 1. Unit will handle work up to 36 in. long and 10 in. in dia with standard tailstocks (Mar 11, p188).

MICROMETERS—*Brown & Sharpe Mfg Co, Providence, RI.* Black-Frame micrometers feature tool-steel measuring faces. Tools are recommended for work where extra-long life under abrasive measuring conditions is not required. They have range of 0-1, 1-2, and 2-3 in. by 0.001 in., and are available with or without clamp ring in both plain and ratchet-stop styles (Jul 1, p134).

SURFACE TESTER—*Distributed by Engis Equipment Co, 431 S Dearborn St., Chicago 5, Ill.* Taylor-Hobson Talysurf 100, a British-made surface roughness gage, comprises a motorized pick-up unit incorporating the work table and a motor unit which indicates surface finish as a CLA reading with 0.03 in. cutoff. This "center line average" reading is the index of all irregularities coming within a prescribed length of surface (Oct 21, p204).

HOLE GAGES—*Hamilton Watch Co, Allied Products Div, Lancaster, Penna.* Kwik-Chek gages have readability and accuracy of 0.0005 in., direct reading scale marked in increments of 0.001 in., and are equipped with 2½X lens. Set of three gages covers hole diameters from 0.025 in. to 0.380 in., each gage having range of 0.125 in. Each gage is priced at $40; complete set, in case, costs $115 (May 6, p180).

HOLE GAGE—*Hamilton Watch Co, Allied Products Div, Lancaster, Penna.* Model C Kwik-Check hole gages afford rapid and accurate measurement of small hole diameters with countersinks. They compensate for the countersink by measuring the hole dia at the base of the countersink, not the countersink itself. Operation is identical to that described for the earlier models (*AM*—May 6 '57, p180) (Dec 2, p156).

DIAL CALIPERS — *Imported and distributed by Titan Tool Supply Co, Inc, 1419 Hertel Ave, Buffalo 16, NY.* Quicktest calipers (Germany) are available in outside and inside models. The outside model is graduated in 0.0025-in. divisions and has a range of 0 to 1 in.; inside model measures from 0.40 to 0.80 in. in 0.001-in. divisions (Oct 21, p220).

END MEASURING RODS—*L S Starrett Co, Athol, Mass.* No. 244 Series rods, designed for use with jig borers and other machine tools, are available in 1, 2, 3, 4, 5, 6, 7, 8, 10, 12 and 15-in. sizes (also in metric sizes) and may be purchased in standard sets or in any combination of sizes. Each rod has several concentric collars of ⅜ in. dia. which serve as bearing surfaces (Dec 30, p122).

SURFACE ROUGHNESS GAGE — *Micrometrical Mfg Co, 345 South Main St, Ann Arbor, Mich.* Profilometer Type LC Tracer is designed to measure surface roughness in holes as small as ¼-in. dia. Tracer has single skid positioned directly back of point, and must be moved by Monotrace. Standard length of tracer is 6 in.; other lengths available (Jun 17, p210).

OUTSIDE CALIPER—*Master Specialty Co, Inc, 3725 Monitor Ave, Minneapolis 26, Minn.* Model 1404 outside caliper measures bar stock, sheet stock, and lathe turnings up to 4 in. thick. Squeezing the handle opens the caliper; a spring closes it on the work. Size is read directly on a 0 to 4-in. scale that is calibrated in 32nds. An inside caliper is also available (Dec 30, p128).

INSPECTION UNIT — *Saratoga Scientific Co, Box 488, Saratoga, Calif.* Electronic instrument, called Micro Surfit, determines surface finish. As probe is stroked across surface, sapphire stylus translates irregularities into signal which is amplified, corrected, and indicated on meter which has readings from 0 to 50, 0 to 100, and 0 to 150 mu-in. (Mar 25, p194).

DIAMETER GAGE—*Acrament Gage Co, 45 Willard Ave, Providence, RI.* Model 200 Set Master Gage accommodates settings of OD's from 3½ to 18 in., ID's from 0 to 15 in. Only key or wrench is required to zero. If desired setting is missed, operator backs oneside control up and approaches again (Mar 11, p192).

INDICATOR DEPTH GAGES—*A G Davis Gage & Engineering Co, 21435 Dequindre Rd, Hazel Park, Mich.* Gages may be assembled from interchangeable parts. By selective variations of components over 3500 standard depth gages may be specified to gage special dimensions. All standard models may be set to either gage blocks or master set gage (Jul 1, p160).

DIAMETER GAGE—*Distributed by W G Haddrell, 583 Cabot St, Beverly, Mass.* Spherical Pin diameter gage (British) consists of a cylindrical central section of a sphere. The ends are diametrically opposite surfaces of the sphere. Gages are available in sizes from 1½ to 16 in. Up to 5-in. size, gage is supplied with Go gage on one end, No Go gage on other. Prices range from $25 to $35 (Aug 26, p180).

DIAMETER GAGE—*WJZ Tool Specialties, Hyde Park, NY.* Shallow diameter gage, Model 201500, is adjustable from 4 to 12 in., measures ID or OD, and weighs only 2½ lb. It can replace many single-purpose gages and rings, and eliminates checking with verniers and pin micrometers. Dial indicator may be rotated through 360° for easy reading. Adjustable set master is available with the gage (Nov 18, p190).

COMPARATOR—*Distributed by Engis Equipment Co, 431 S Dearborn St, Chicago 5, Ill.* Self-checking comparator (British) gives exact measurements of gage blocks and length bars. The wall-mounting type checks gages up to 40 in. in length; bench type, up to 14 in. Readings may be made to 0.000001 in. Because end bars are positioned vertically the problem of sag need not be considered (Dec 2, p156).

BORE GAGES—*Foster Supplies Co, 6722 Milwaukee Ave, Chicago 30, Ill.* Diatest bore gages measure hole diameters from 0.062 to 0.787 in. at depths up to 3⅛ in. Easily operated by unskilled workers, they measure out-of-round, tapered, or barrel-shaped bores, incomplete bores or with other bores interfering crosswise. Units measure down to 0.00094 in. (Aug 26, p168).

INSPECTION FIXTURE—*Woodworth Co, 1300 E Nine Mile Rd, Detroit 30, Mich.* Unit can be used to check parts for concentricity and squareness. Tool is combination of company's Tork-Lok collet arbor and Zero Spindle inspection fixture (Jan 14, p183).

INTERNAL CALIBRATING MASTER—*Sheffield Corp, Dayton 1, Ohio.* Electronic unit is adjustable over range from 5 to 36 in. and is available with dual amplification of 1000/2000, 2500/5000, 5000/10,000, or 10,000/20,000 to 1. Gage, supplied as kit, includes gage handle with transducer pickup cartridge, 6 length bars from 1 to 8 in. long, and amplifier (Jan 14, p162).

ELECTRONIC COMPARATOR — *Cleveland Instrument Co, 735-737 Carnegie Ave, Cleveland 15, Ohio.* Micro-Ac electronic micro-comparator, Model MA-1720, is recommended for use where max accuracy and reliability is required, such as gage block calibration, thread wire, servo pistons, and balls. Measurements to one-millionth can be made with a minimum of skill. Gage head, amplifier, and stand make up complete unit (Sep 23, p200).

ELECTRONIC COMPARATOR — *Federal Products Corp, 1133 Eddy St, Providence 1, RI.* Model 130 B-9 will detect dimensional variations as small as one millionth of an inch. Gage consists of three parts—an electronic amplifier, indicating meter, and electronic gage head mounted on adjustable column. Magnifications range from 60,000 to 1 (0.000001-in. graduations) to 2000 to 1 (0.000030-in. graduations) (Jun 17, p188).

COMPARATOR — *Distributed by George Scherr Co, Inc, 200 Lafayette St, New York 12, NY.* Electric comparator (German) has a signal light attachment that reports over- and under-size as well as correct size accurately within 20 millionths by flashing of green, red, or yellow lights. Second socket in light-signal box can be used to install audible signal or other indicating device. Prices start at $235 (Aug 12, p180).

INTERNAL COMPARATOR GAGE—*Distributed by Opto-Metric Tools, Inc, 137 Varick St, New York 13, NY.* Gaging head of German-made gage is semi-optical device with 1000:1 magnification; reading on illuminated screen is to 0.00005 in. Using only two sets of interchangeable jaws, bores between ¼ and 3½-in. diameter and up to ¾ in. deep may be gaged. Head swings to rear for gaging of OD's up to 4 in. (Sep 23, p200).

ELECTRONIC GAGE—*Cleveland Instrument Co, Inc, 735 Carnegie Ave, Cleveland 15, Ohio.* Model 1A-515 Indi-Ac dimensional gage and comparator features three coded meter scales that simplify measurement of dimensional variations of from 0.00001 to 0.010 in. Switch indicates high, medium or low range. Minute changes in gage tip position are electronically amplified up to 10,000 times and are read directly on meter (Apr 8, p195).

ELECTRONIC GAGE UNITS—*Sheffield Corp, Dayton 1, Ohio.* Gage team consists of electronic pickup cartridge, called Electrojet, and portable electronic amplifier, Accutron. Transducer-type cartridge, ⅜ in. in dia by 1⅞ in. long, requires no calibration. Stylus travel is approximately 0.110 in. It can be used with range of amplifications from 1000:1 up to 40,000:1 (Feb 11, p164).

ELECTRO-MAGNETIC GAGE HEAD —*Federal Products Corp, Providence, RI.* Electro-Probe gage head has an electronic signal which is extremely linear with respect to contact movement. Linear output is available over 0.060-in. contact travel. Gage head is used in Model 230P-2 electronic test indicator, which includes gage head, battery-powered transistor amplifier, and accessories (Oct 21, p224).

AIR GAGE COMPARATOR — *Freeland Gauge Co, 9940 Freeland Ave, Detroit 27, Mich.* Model L gage works on back-pressure circuit principle. Unit consists of filter, pressure regulator, pressure gage, adjustable restriction unit, and gaging indicator. Indicator has adjustble limit pointers and linear scale. Graduated scale on indicator is calibrated by min and max masters (Jul 15, p198).

LIGHTWEIGHT GAGE—*Myer Corp, AcraMent Gage Div, Providence, RI.* Model 500 measures in increments of 6 in. starting at 12 in. to more than 50 in., while gaging depths of 0 to 2 in. can be measured. Center of contact and rest pins are located at reference end thus eliminating large portion of deflection. Instrument is reversible for ID and OD measurements (Jul 15, p194).

COMPARATOR-TYPE GAGE — *Sunnen Products Co, 7900 Manchester Ave, St Louis 17, Mo.* Internal diameter gage, designated PG-800, is entirely mechanical and self-contained. It covers an unusually wide range—from ⅜ to 1½-in. diameter—and has a full scale reading of 0.005 in. with graduations of 50 millionths. Magnification is 1000:1. Available on a "use-lease" plan (Oct 7, p180).

GAGE—*Shepard & Young Tool Co, 15150 Telegraph Rd, Detroit 39, Mich.* Jet engine blades are checked for accuracy in universal gage which can handle a variety of blade forms and lengths. Templet holders are positioned by interchangeable master gage bars. Templets engage foil section of blade to indicate form accuracy as well as blade tilt and bow (Dec 16, p174).

GAGE—*Federal Products Corp, Providence, RI.* Model 139B "pressureless" gage exerts a pressure of only 0.005 grams or approx 1/10,000 oz. Low gaging pressure is achieved through an arrangement in which gaging contact is raised and lowered by a special type of wire which fluctuates in length as it is heated and cooled (Aug 26, p158).

DIAL INDICATOR—*M & G Instrument Co, 12940 Saticoy St, North Hollywood, Calif.* Dial of the "Pearson" is graduated to 0.050; range of indicator is 0.075. Unit will read either direction with no reversing lever. It will track with no appreciable lag, making it particularly adaptable for aligning holes and general setting-up to within 0.0001 of an inch (Oct 21, p226).

INDICATOR GAGE — *Ellstrom, Inc, Dearborn, Mich.* Shalo-Chek is designed for measuring critical dimensions of shallow slots, grooves, and holes. Gage is 1 13/16 in. high and can be used at machine to check depths from 1/32 to ½ in. Three models are available, ranging from ½ to 6 in., 4 to 12 in., and 10 to 18 in. (May 6, p186).

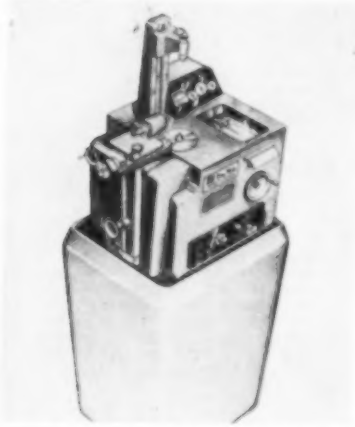
DIAL INDICATORS — *Petz-Emery, Inc, Pleasant Valley, NY.* Golden Emre indicators provide repeated readings to accuracy of 1/5 of a graduation over entire range. Dials are available with graduations of 0.0001, 0.0005, or 0.001 in. in three corresponding ranges of ±0.002, 0.010, and 0.020 in. respectively (Aug 26, p162).

INDICATING GAGES—*Standard Gage Co, Inc, Poughkeepsie, NY.* Check Master, reported to respond to dimensional variations of 0.000020 in., is available in six models, including both regular and non-magnetic types. Device is available with 1⅛- or 1¾-in. dials, graduated to 0.0001, 0.0005, or 0.001 in., with range of 0.008 or 0.016 in. (Mar 25, p212).

CONTROL UNITS — *Cargill Detroit Corp, Birmingham, Mich.* Automatic size control, gaging, inspection, and classifying can now be built into new machines or added to existing models. A typical application includes meter-type size indicator, comparator-type transducer head for size control, servo motors, electronic classifier for operating reject gates and shutoff, and magnetic power amplifier for servo motors (Jun 17, p215).

PLUG GAGES—*Dundick Tool Works, Inc, 5410 West 31st St, Chicago 23, Ill.* De Luxe gages are precision ground from oil-hardened tool steel, and have tolerance of plus or minus fifty millionths. Line includes sizes from 0.030 to 0.750 in. in increments of 0.001 in. Seven sizes of handles with red and green anodized ends, along with necessary collets, are available. Cabinet is offered free with complete or sectional sets (Jun 3, p176).

DIAL BENCH GAGE—*Air Transport Equipment Inc, Engineering Dept, Amityville, NY.* Unit is constructed to permit rough handling, and is equipped with two 0.0001-in. dial indicators with revolution counters. Yoke permits measurements to 2 in. Price is $68.50 (Jul 15, p194).



GEAR CHECKER — *Illinois Tool Works, 2501 N Keeler Ave, Chicago 39, Ill.* Instrument called Micrite is reported to be the first involute profile measuring device capable of checking fine pitch gears. Unit can check gears up to 6-in. dia, with vertical distances between centers up to 9 in. and diametral pitches from 20 through 100 (Nov 18, p190).

PORTABLE INSPECTION BENCH —*Wright Tool Co, 4316 N Woodward Ave, Royal Oak, Mich.* Bench has a 24 x 28-in. vinyl-covered top which makes an ideal surface for gage inspection. Other features include a pullout writing desk, retractable folding seat, drawers for gages, records, and instruments. Unit is 34 in. high and comes equipped with a 50-ft extension cord (Nov 18, p218).

TUBE GAGER—*Pratt & Whitney Co, Inc, West Hartford 1, Conn.* Wall and bottom thickness of impact-extruded aluminum tubes is checked on automatic gaging machine that automatically separates them into good, rectifiable, and rejected categories at the rate of 1000 units per hr (Jul 1, p140).

SCREW GAGE—*Dayton Rogers Mfg Co, 2824 13th Ave S, Minneapolis 7, Minn.* Screw and diameter gage sizes wood and machine screws from 0 to 12, and diameters from 1/16 to ¼ in. Gage, featuring easy-to-read graduations, is free when requested on company letterhead (Sep 23, p204).

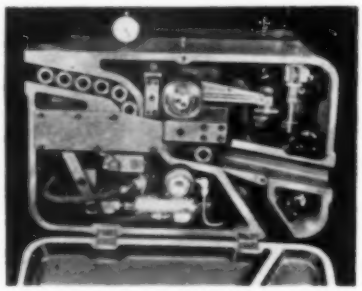
GEAR GAGE—*Bedford Gear and Machine Products, Inc, 550 Krick Rd, Bedford, Ohio.* Gage checks gears for runout, circular pitch spacing, tooth thickness variation, profile error, lateral runout and pin measurement. It can also be used to check shafts for roundness, internal ring groove depth, bores and blind recesses. Indicator shows amount oversize or undersize. Gage weighs 25 lb (Dec 2, p152).

THREAD-GAGE ATTACHMENT —*Bryant Chucking Grinder Co, Bryant Gage and Spindle Div, Box 620, Springfield, Vt.* Attachment permits a face, shoulder, or counterbore to be checked for squareness in relation to a thread during machining as well as at inspection. Device attaches to any standard Bryant P-21 portable internal thread gage and permits complete check of the internal thread (Sep 23, p192).

GAGE ACCESSORY—*Sorensen Center-Mikes, Inc, 264 Kossuth St, Bridgeport 8, Conn.* Booster-Bar, for use with company's Center-Mike hole-location gages, adds up to 9 in. to measuring range (Feb 11, p180).

CONCENTRICITY ATTACHMENT—*Bryant Chucking Grinder Co, Springfield, Vt.* Attachment is used on Bryant B-21 bench gage to check concentricity of small internal conical surfaces in relation to a thread (Apr 8, p184).

CONCENTRICITY GAGE—*Clark Engineering and Mfg Co, 1820 Layard Ave, Racine, Wis.* Gage can be used on drillpresses, boring tools, and lathes; in toolrooms and inspection operations; and in all positions because it is attached magnetically. Lateral adjustment for indicator is mounted in magnetized holder. Gage, with box, sells for $97.50 (June 17, p210).



GEAR CHECKER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Automatic unit provides 100% inspection of helical or spur gears for concentricity. Unit uses conjugate rolling action in two directions of rotation with a master gear in mesh with part to determine and monitor amount of eccentricity. After checking, parts within predetermined tolerances are passed to next operation; parts that are eccentric are shunted from system (Dec 2, p151).

GAGING AND SORTING UNIT — *U S Engineering Co, 40-24 22nd St, Long Island City, NY.* Precision Sorter is used with company's Lift-O-Matic to gage or sort such items as steel balls, screws, bolts and relay contacts. Parts are gaged at speeds up to 200,000 per hr with a maximum error of ± 0.0003 in. (Feb 14, p165).

THREAD TRIANGLES — *Montgomery Tool Co, 7 Tichenor Lane, Newark, 5, NJ.* Precision-ground gages in form of two 60° triangular bars come with chart of sizes for standard thread. Each point in triangle is used for measuring threads between specified pitch diameter (Jan 14, p186).

SETTING MASTER—*Standard Gage Co, Inc, Poughkeepsie, NY.* Dial bore gage setting master eliminates need for master ring gages or gage block and surface plates. Two models are available: one will set all gages from 0 to 7 in., other ranges from 0 to 14 in. Master can be set to XX accuracy in less than 5 min with gage blocks; can be used vertically or horizontally (Jul 1, p148).

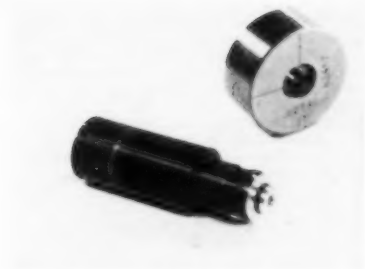
GAGE POINTS—*Robert Marks Co, 47 Goddard St, Providence, RI.* Boron-carbide gage points, trademarked Norbide, are available for standard and special gages. Cheaper than sapphire or tungsten carbide, points won't pick up dust or become charged, will remain smooth and polished during use and will not scratch work (May 20, p202).

RADIUS GAGES—*Brown & Sharpe Mfg Co, Providence, RI.* Series 628 gages cover range from 1/32 to ½ in. Each gage has five different gaging edges, permitting testing of both convex and concave radii. Gages are stainless steel and are furnished with an interchangeable holder. They are available in three sets: 1/32 to 17/64 in. by 64ths, 9/32 to ½ in. by 32nds, and a combined set of both ranges (Dec 30, p141).

GAGING BALLS — *Deltronic Corp, 1507-1509 Riverside Drive, Los Angeles 31, Calif.* Precision micro-balls, ranging in size from 1/16 to ½ in. in dia and made to a tolerance of 0.000025 in., have been added to company's line of gages. There are 15 sizes, 3 balls of each size, and they fit into snap-in holes in carrying case (May 20, p224).

GEAR CLASSIFIER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Unit checks root dia of external splines or keyways on drum-type parts. Parts move down inclined ramp to stop position, then are indexed and measured by upper and lower probes. Qualified parts continue through unit to next operation (Feb 11, p180).

GAGES—*Pratt & Whitney Co, Inc, West Hartford 1, Conn.* Line of specialty gages consists of: Dual-Aire Air-O-Limit comparator for use at machine on close tolerance grinding or lapping operations; Automatic Radial-Play Gage; Sigmatic automatic gaging machine; Digital Read-Out Supermicrometer; Electro-limit Supermicrometer; and Tri-Rol Thread comparator (May 20, p196).



AIR GAGING SPINDLE — *Moore Products Co, H & Lycoming Sts, Philadelphia 24, Penna.* Hardcoat Plug, made of aluminum, has recessed nozzles and a hard wear surface. Cost is less than half that of conventional chrome plug. As gage wears it changes color—black wear surface gradually takes on the color of base aluminum. Also available is a 2-D master ring which offers both min and max dimensions (Oct 7, p166).

AIR GAGE SPINDLES — *Dearborn Gage Co, Air Gage Div, Dearborn, Mich.* Spindles for any standard air-gage instrument, regardless of make or model, are available in steel, chromium, and carbide; in through-hole, counterbore, and blind types; and in sizes ranging from 0.275 to 3-in. dia (Apr 8, p206).

PLUG AND THREAD GAGES — *Detroit Tap & Tool Co, 8615 E Eight Mile Rd, Baseline, Mich.* Carbide plug gages are available in two types, reversible (wire type) from 0.020 to 0.760-in. dia, and AGD taperlock type from 0.105 to 1.510-in. dia. Both are available in XX, X and Z tolerances. Carbide thread gages come in taperlock and trilock types from No. 4 through 3-in. sizes, and in reversible types from No. 4 through ¾-in. sizes (Jun 17, p223).

HOLE GAGE—*George Scherr Co, 200 Lafayette St, New York 12, NY.* Holojust checks bore dia, as well as out-of-roundness and bell-mouth. Adjustable screws at either end are set by micrometer or gage blocks. Set of 5 gages covers range from 7/16 to 2 5/16 in., and costs $39.50 complete with case (Mar 25, p226).

FLUSH PIN GAGES—*Foster & Allen, Inc, 628 South Ave, Garwood, NJ.* Royal Flush gages, for inspection and production, are available in four sizes: 0.1875, 0.2500, 0.3750, and 0.5000-in. dia. Barrel dia range from ⅞ to 1⅛ in., lengths from 1⅛ to 1¼. Countersink and double-step pin gages are available (Mar 25, p226).

CRANKSHAFT GAGE — *Sheffield Corp, Dayton 1, Ohio.* Precisionaire checks four diameters, taper, throw diameter, and throw dimension on crankshaft of air conditioner compressor unit at rate of 350 to 400 parts per hr. Gage consists of holding and locating device, bottom-type air ring, air snap, and 8-column Precisionaire (Mar 25, p200).

AIR GAGES—*Dearborn Gage Co, Air Gage Div, Dearborn, Mich.* Multiple-column unit can be supplied with any number of columns for given application; standard instruments ranging from 2 to 8 columns. Features include self-cleaning pressure system, interchangeable components, 2-step amplification conversion, and zero-centered scale (Apr 22, p208).

AIR GAGE CARTRIDGES—*Dearborn Gage Co, Air Gage Div, 22038 Beech St, Dearborn 8, Mich.* Cartridges for interchangeable use on any air gage instrument are offered in line including normal, short normal, and reverse cartridges, which can be used for 1500, 3000 and 6000:1 amplification ranges. Cartridge for 15,000, 30,000 and 60,000:1 ranges is available (Jun 3, p170).

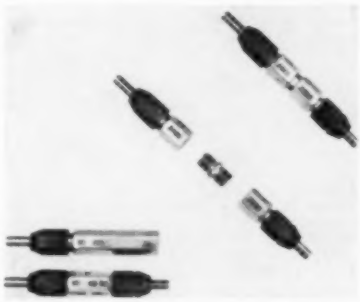
SIZING BALLS—*F & M Sales Co, 2928 Fisk Lane, Redondo Beach, Calif.* Chrome-steel balls ranging from 1/16 to ½-in. dia are made to tolerance of 0.000025 in. Balls, furnished in carrying cases, are tightly fitted into snap-in holes. Special tool is provided to pop them out (Jan 14, p181).

SIZING GAGE—*C E Johansson Gage Co, Dearborn, Mich.* Deltameter is Swedish-made device applicable to any grinder with standard fitting for dial gages. Gages are graduated in 0.001, 0.0005, 0.0001, and 0.00005 in. Scale range is 0.013 in., divided into one coarse and one fine range. Accuracy is ± 0.00005 in. (Feb 11, p168).

SNAP GAGE—*Lincoln Park Industries, Lincoln Park 25, Mich.* Gage has retractable anvil that permits faster operation. Gage is available in size ranges from ¼ to 5 in., with carbide anvils furnished to suit individual requirements (Aug 12, p186).

DIAL SNAP GAGE—*Jerico, Inc, 4744 West Lake St, Chicago 44, Ill.* Gage is said to be shockproof and offers complete visibility of gage at all times. There is no limit to depth gaged; travel may be controlled so that operator cannot misread in second turn of dial. Designated Nilco, and developed by Nilsson Gage Co, gage can be used for involute checking of helical or conventional gears (Jul 1, p153).

ROLL GAGE—*A G Davis Gage & Engineering Co, 21435 Dequindre Rd, Hazel Park, Mich.* Roll-Chek gage provides a fast, positive means of checking roll dimensions on all types of rolls, including pins and taper gages. Gage is offered with or without sets of steel rolls. Price of gage alone is $280 (Mar 11, p192).

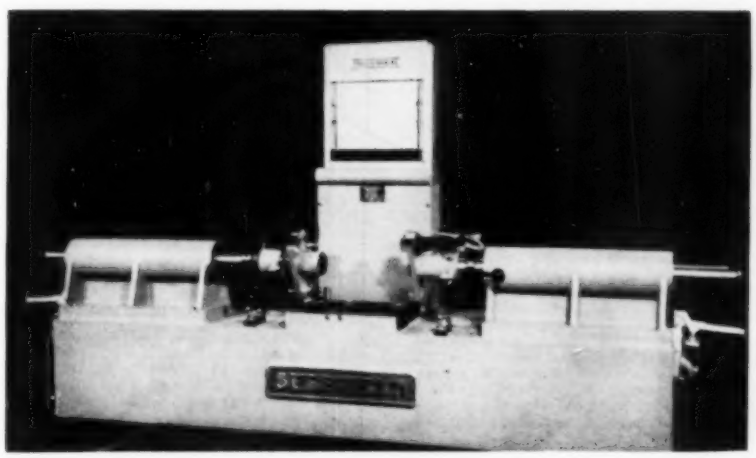


PLUG GAGES—*Van Keuren Co, 176 Waltham St, Watertown, Mass.* New Duplex handle allows inspector to combine Go and No Go ends of wire-type plug gages for any double-end combination in a matter of seconds. Members are locked in marked handle units for use as single-end gages or combined for double-end use. Gage ends are colored red and green (Sep 9, p184).

PLUG GAGES—*Rite-O Tool & Gage Co, 321 W Ten Mile Rd, Hazel Park, Mich.* Ritoloy gages have extremely hard, wear resistant, nickel-alloy surfaces, and cost about one-third as much as solid carbide gages. Material has low coefficient of friction, is non-magnetic, and non-sparking (Jun 3, p158).

DIAL BORE GAGE KIT — *Boice Gages, Inc, Hyde Park, NY.* Tri-O-Set contains 3 dial bore gages covering range from ⅛ to ¼ in., ¼ to ½ in., and ½ to 1 in. Setmaster masters three gages to any dimension within range of 0 to 1 in. (Mar 11, p177).

GAGE — *Standard Instruments Div, 610, Sheffield Corp, Dayton 1, Ohio.* Transmission housings are inspected for three depths, four diameters, and five points of flatness on 12-column Precisionaire pneumatic gage. Five Plunjet cartridges in serrated plate gage flatness (Mar 25, p198).



TESTING MACHINES—*Tinius Olsen Testing Machine Co, Easton Rd, Willow Grove, Penna.* Lo-Cap line of electro-mechanical testing machines is available in capacities from 100 to 5000 lb. Machines feature electronic load indication and each machine has two range capacities—full and 1/5 or 1/4 capacity, indicated on same dial. Infinitely adjustable testing speeds of from 0.3 to 12 ipm are electronically controlled (Aug 12, p163).

COATING TESTER—*Gardner Laboratory, Inc, Bethesda, Md.* Device, developed and licensed by Crown Cork & Seal, Inc., Baltimore, tests nonmetallic coatings on metals. Stylus, linked to thyratron, rests on surface of sample. Weight is applied to stylus gradually. If weight is sufficient to cause stylus to pierce coating and contact metal surface, thyratron closes relay and scale indicates weight required to break coating (May 6, p204).

HARDNESS TESTERS—*Torsion Balance Co, Clifton, NJ.* Kentrall motorized combination hardness testers, available as standard models in both 8 and 12-in. vertical capacity, reduce operator fatigue by motorization of major load. Production can be increased as much as 10 to 20% (Jun 17, p186).

SONIC ANALYZER — *Panoramic Radio Products, Inc, 10 S Second Ave, Mt Vernon, NY.* Model LP-1a, through spectrum analysis of sounds, vibrations and waveforms, is used to identify mechanical and electrical defects and variations in many types of rotating and oscillating machinery. Recorder may be added to give record of waveform content over extended periods (May 6, p190).

GEAR SPEEDER—*Michigan Tool Co, 7171 E McNichols Rd, Detroit 12, Mich.* Model 1129-SP uses enclosed spindles and built-in listening horn to provide noise inspection of gears up to max dia of 23 in. with max face width of 10 in. Spindle speeds of 580, 870, 1160 and 1740 rpm are obtained from ¾-hp motor. Center distance is 2½ to 12 in. (Apr 22, p192).

VIBROMETER—*Vibroscope Co, P O Box 97, Glenford, NY.* Model-P Davy Vibrometer measures vibration amplitude on machine structures. Amplitude appears on scale as reflected band of light. Available in magnifications of 125:1, 250:1 and 500:1 (Mar 11, p206).

TORQUE WRENCH TESTER — *P A Sturtevant Co, Addison, Ill.* Industrial torque wrench tester features torsional-shaft measuring device immersed in oil, and an optical indicator system which eliminates mechanical linkages. Three models will rapidly test all types of torque wrenches, including reflex or sensory signalling models, over a range of 0 to 500 ft-lb (Mar 11, p178).

TORQUE WRENCH CALIBRATOR—*Skidmore-Wilhelm Mfg Co, 442 S Green Rd, Cleveland 21, Ohio.* Hydraulic torque wrench calibrator is capable of testing torque wrenches to within 1% of accuracy of full scale reading. Smallest unit has torque readings of 0 to 200 in.-oz or 0 to 200 in.-lb; second calibrator, 0 to 60 ft-lb or 0 to 150 ft-lb; largest instrument, 0 to 600 ft-lb or 0 to 2000 ft-lb (Jul 29, p146).

MAGNETIC LEECH — *Magnaflux Corp, 7300 W Lawrence Ave, Chicago 31, Ill.* Permanent magnet Leech, No. 54975, for magnetic particle testing consists of alnico magnet, cast-steel pole pieces, aluminum carrying handle, and 5 ft of 2/0 cable. It will remain attached and make electrical contact as long as desired on any magnetic surface (Aug 26, p170).

VIBRATION TESTER—*International Research & Development Corp, 797 Thomas Lane, Columbus, Ohio.* Model 305 vibration amplitude meter weighs 24 oz, is battery-operated, and is calibrated directly in ranges of 0.1, 1, and 10 mils full scale reading. Applications include machine tool maintenance, inspection and quality control of rotating equipment (Jul 15, p190).

COMPRESSION TESTER — *Steel City Testing Machines, Inc, 8817 Lyndon Ave, Detroit 38, Mich.* Portable, hydraulically operated compression tester, Model TP-121, features simple hand pump operation, ease of vertical adjustment, and a capacity of 150,000 lb. Unit weighs only 170 lb. Any vertical dimension between 9½ and 32 in. can be obtained (Oct 7, p174).

HARDNESS TESTER — *American Chain & Cable Co, Inc, 929 Connecticut Ave, Bridgeport 2, Conn.* Console model, fully automatic hardness tester, Size 3, classifies tested workpieces into one of three categories—correct, too hard or too soft. Workpieces may be tested in one of two ways: manual feed and manual disposal; or semi-automatic, with manual loading and automatic disposal and classification (Apr 8, p186).

HARDNESS TESTERS—*Gries Reproducer Corp, 125 Beechwood Ave, New Rochelle, NY.* Reflex machine, with dead weight loads of 1 kg to 120 kg, has an automatic load selection system. Projection system gives enlarged image (70 to 140X) on projection screen. Micro-reflex tester is equipped with dead weights ranging from 10 g to 3 kg. Machine is suited for testing thin specimens (Apr 22, p194).

LEAK DETECTOR CALIBRATOR — *General Electric Co, Schenectady 5, NY.* Halogen Leak Standard features accurate leak size determination of ±10% of full scale. Unit consists of a halogen vapor system capable of providing a calibrated and adjustable leak, and a filtered air system. Leak detector probe is inserted into gun fitting of the standard. Output indicator then shows appropriate reading. Unit weighs 13 lb (Feb 25, p219).

WEAR DETECTOR—*Sperry Products, Inc, Danbury, Conn.* Bearing Tester detects and measures wear without disassembly of machinery. Instrument consists of metal probe connected to electronic amplifier equipped with calibrated meter, loudspeaker and controls. Malfunctioning parts transmit noise energy to supporting bearings, probe picks up transient energy, sensing total and instantaneous noise changes that indicate impending trouble (Apr 8, p172).

FILM THICKNESS GAGE—*Boonton Radio Corp, Boonton, NJ.* Electronic instrument, Type 255-A Film Gauge, can measure protective coating thicknesses of anodic films on anodized aluminum, magnesium, and other nonmagnetic metals—including such insulating films as organic paints, porcelain, and enamel. Unit can also be used to sort metals according to magnetic properties (May 20, p194).

COATING THICKNESS GAGE — *Unit Process Assemblies, Inc, 61 East 41st St, New York, NY.* Dermitron Model D-2 non-destructive coating thickness tester gives direct measurements of coating thickness of almost any coating on any base, including metal coatings on metal base, nonmetallic coatings on non-metallic base, and metals films on non-metallic base (Jun 3, p154).

CONDUCTIVITY METER — *Magnaflux Corp, 7300 W Lawrence Ave, Chicago 31, Ill.* Conductivity meter, FM-100, uses a simple hand detector pickup to give immediate readings of conductivity in absolute units, with no variables due to contact. Instrument can measure purity and hardness, sort mixed non-magnetic metals, and determine uniformity of heat treatment (Oct 7, p170).

COATING TESTER—*R O Hull & Co, Inc, 1300 Parsons Court, Rocky River 16, Ohio.* Anodicator provides method of testing anodized aluminum and its alloys. Unit checks thickness of coating by dielectric spotchecks. Instrument provides uniform, slow rate of voltage increase and uniform pressure of probe on anodic surface. Models are available with capacities of 1000, 2000, and 5000 volts (Aug 12, p170).

VIBRATION METER—*Distributed by Eric Wahlquist Business Eng'g, 1827 Norman Ave, Park Ridge, Ill.* Sinus Vibrometer (product of Sweden) consists of electrodynamic pickup and an integrating and indicating unit. Voltage obtained from pickup is, within limits, proportional to velocity of vibration. Integrating device transforms velocity to an amplitude which is indicated on meter. Frequency range is from 13 to over 133 cps (Sep 9, p194).

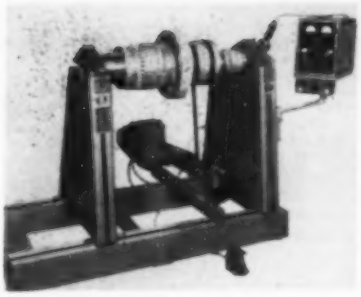
INDUSTRIAL STETHOSCOPE—*Distributed by M Paquet & Co, Inc, 17 Battery Pl, New York 4, NY.* Airsonic industrial stethoscope, made in Belgium, has no diaphragm and is nonelectric. It is capable of picking up sounds of all frequencies. Once frequency of the malfunction is known it can be traced throughout mechanism without interference from background noises (Aug 26, p176).

BOLT STRENGTH TESTER—*Skidmore-Wilhelm Manufacturing Co, 442 S Green Rd, Cleveland 21, Ohio.* Portable, hydraulic Tensile Tester is equipped with direct-reading meter. Three models have gages for bolts from No 10 x ¾ in. long to ½ x 1¾ in. long; from ⅝ x 2¾ to 1 x 2¾; and from ⅝ x 2¾ to 1¼ x 4 in. long. Proper calibration can be made on impact wrenches by tightening bolt in the instrument with wrench and checking against dial (Oct 7, p180).

VIBRATION MONITOR SYSTEM — *Robertshaw-Fulton Controls Co, Fielden Instrument Div, 2920 North Fourth St, Philadelphia 33, Penna.* Non-electronic vibration monitor system is sensitive to increases in vibration yet ignores both starting vibration and transient shocks normal to operation. Unit is held inoperative for a selected time of up to 120 sec after starting to allow protected equipment to reach full speed (Aug 26, p170).

VIBRATION ANALYZERS—*International Research & Development Corp, 797 Thomas Lane, Columbus, Ohio.* Model 300 is intended primarily for in-place and production balancing, while Model 400 incorporates features for analyzing or troubleshooting as well as balancing of vibrations in rotating machines. Units consist of sensitive, seismically mounted vibration pickup, amplifier, and strobe light (Jun 3, p160).

TORQUE ANALYZER — *Distributed by Richmont Inc, 922 S Myrtle Ave, Monrovia, Calif.* Model P-15 analyzer utilizes a torsion bar with a dampening effect. Unit weighs 20 lb, measures 5 in. wide, 18 in. long and 8 in. high. Dial length is 7 in.; drive is a 5/16-in. male hex. Capacity is 0 to 150 in.-lb. A dead-weight test wheel is furnished with the instrument (Dec 16, p178).



BALANCING MACHINES — *International Research and Development Corp, 797 Thomas Lane, Columbus, Ohio.* Multi-purpose dynamic balancing machines are used for dynamic and single plane balancing, to check vibration of assembled machinery. Rotors weighing 5 to 300 lb are handled on Model 101, from 50 to 1000 lb on Model 102, and from 250 to 2500 lb on Model 103 (Sep 9, p120).

FLAW DETECTION FLUID — *Harry Miller Corp, 4th & Bristol Sts, Philadelphia 40, Penna.* Immunol 438, for use in aqueous phase magnetic particle inspection of metals, is said to give better definition of flaw and to prevent rusting. Fluorescent or non-fluorescent paste can be suspended in a mixture of one part Immunol 438 to 17 parts water (May 6, p204).

WELD TESTING MACHINE—*Steel City Testing Machines, Inc, 8817 Lyndon Ave, Detroit 38, Mich.* Guided bend testing machine tests butt-welded samples in accordance with the qualification procedure of the AWS and the ASME. Designated Model GB-124, machine accepts different fixtures to handle different thicknesses of metal. Capacity is 15,000 lb (Dec 16, p172).

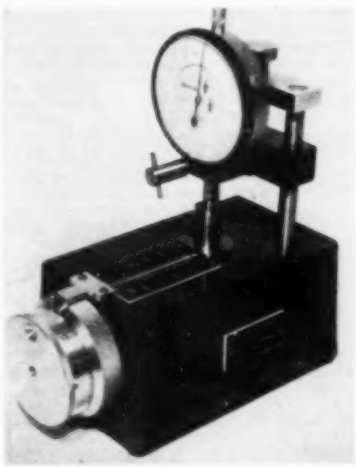
DISTRIBUTOR TESTER — *Airborne Instruments Laboratory, Inc, 160 Old Country Rd, Mineola, LI, NY.* Electronic unit, developed for Ford Motor Co, is used for production-line testing of fully assembled distributors. It functionally checks distributor and displays performance characteristics on 17-in. TV picture tube. Following characteristics are checked: dwell and dwell uniformity, advance angle-vs-speed, firing uniformity, and advance angle-vs-vacuum. Over-all accuracy is within ±1% of full scale on either axis (Feb 25, p191).

VIBRATION DETECTOR — *Valley Engineering Corp, 15th and Elm Sts, Easton, Penna.* Detectoscope is designed to disclose internal sounds in bearings, motors, gear-trains, and other mechanical devices. This all-aluminum transistor unit is battery powered, and is reported to have great sensitivity and high amplification. Revised price is $76 (Nov 18, p196).

HOLE LOCATOR—*E L Swart Co, Seattle, Wash.* Device called Blindriller contains a drill bushing and a magnetic pointer, and is used to find hidden holes. A small magnet of opposite polarity is put in the hole and device is run over surface until hole is located. Bushing guides drill. It was developed and licensed by Boeing Airplane Co (Jul 1, p134).

HARDNESS TESTER ATTACHMENT—*King Tester Corp, Philadelphia, Penna.* Attachment permits measurements in such inaccessible places as the groove of a sheave. Pressure is transferred from angle attachment so that full load of 3000 kg is applied through a 10-mm ball. Resulting impression is read with a microscope (Oct 21, p203).

MAGNETIC INSPECTION—*Sonoflux, PO Box 14543, Houston 21, Texas.* Magnetic inspection supplies include red, yellow, grey, and black powders; red and black paste and fluorescent paste and powder; bulb-type powder dispensers; colored inspection tapes, tags, and dispensers; and new gun-type powder blower (Jul 29, p158).

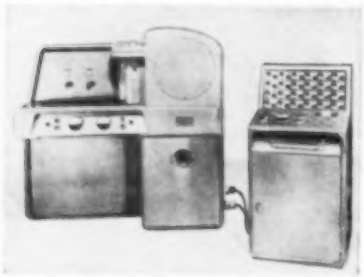


DIAL-INDICATOR CALIBRATOR — *Scientific Instruments, Inc, 541 Devon St, Kearney, NJ.* Model CS-75 provides direct readings to 0.000025 in. Range is 0 to ½ in. Other features: reference scale graduated 0-500 and 500-0 for cw and ccw readings; rapid traverse for coarse adjustment; screw-adjustable mount for easy zeroing (Apr 8, p176).

VIBRATION METER — *Vibroscope Co, PO Box 97, Glenford, NY.* Davey Hand Vibrograph is a compact, self-contained instrument for making permanent records of machinery vibrations on a continuous paper chart. It measures amplitude and frequency, and offers magnifications of 40, 20, 10 or 5:1 (Nov 4, p194).

TORQUE RECORDER—*Swift Tools Inc, Sioux Falls, SD.* Unit is designed for checking and recording calibration accuracy in torque wrenches; repetition accuracy in torque wrenches; or break-away torque on rotating parts. Deflection of torsional rod is recorded in polar coordinates; several hundred recordings can be made on one sheet (Jul 29, p156).

TESTING MACHINE — *Tinius Olsen Testing Machine Co, 5965 Easton Rd, Willow Grove, Penna.* Air-O-Stress rupture and creep tester is available in 12,000 and 20,000-lb capacities. Applied load is read from large dial on top of machine. Loads can be applied and maintained for any period of time from minutes to years (Jun 3, p154).



X-RAY SPECTROGRAPH — *Philips Electronics, Inc, Instruments Div, 750 S Fulton Ave, Mt Vernon, NY.* Recent design additions to the Norelco Autrometer, multi-indexing spectrograph, have extended the range to include 81 elements, from magnesium to uranium. The instrument is a tool for maintaining precise quality control of incoming raw materials, processes, and finished products (Oct 21, p203).

RADIOGRAPHY MACHINE — *Budd Co, Nuclear Systems Div, 2450 Hunting Park Ave, Philadelphia 32, Penna.* The Iriditron 40 has penetrating power of a 400,000-v X-ray machine yet weighs only 40 lb. It employs radioactive Iridium 192 in strengths up to 30 curies for non-destructive inspection of metals and other materials. This is equivalent to 20,000 mg of radium (Sep 23, p187).

DIRECT - READING SPECTROGRAPH—*Intercontinental Electronics Corp, 1551 Franklin Ave, Mineola, NY.* New French-made direct-reading spectrograph permits measurement of instantaneous values. A series of special rulers permit the operator to program the unit so the multiplier stops only at required lines. Average time for a complete alloy analysis is about 1½ minutes. The reproducible accuracy is extremely high. Cost is approx $30,000-35,000 (Oct 21, p202).

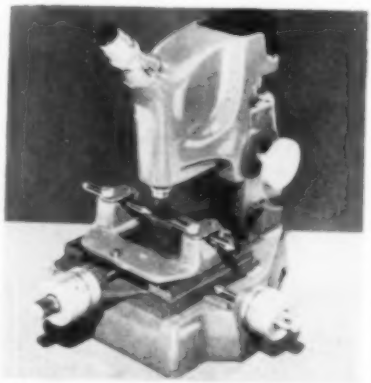
XERORADIOGRAPHY — *General Electric Co, X-Ray Dept, Milwaukee 1, Wis.* X-ray inspection process uses plates that can be erased and used over again, and produces, in 20 to 45 sec after exposure, a finely detailed image. Selenium-coated metal plate is electrostatically charged before exposure. X-rays passing through casting partially discharge plate, in inverse proportion to density of object. Powder is sprayed on plate; image is formed as particles gather in higher-charged areas (Feb 25, p198).

MEASURING MACHINE — *Imported by J Arthur Deakin & Son, 150-28 Hillside Ave, Jamaica 32, NY.* Optical unit checks contours of 3-dimensional cams to tolerances as close as 0.00005 in. English-made machine records rectangular coordinates and rotary movements simultaneously; also adaptable for checking gears, threads, length measures, and gap gages (Apr 22, p208).

X-RAY UNIT—*Balteau Electric Corp, Stamford, Conn.* Baltoscope 200 portable X-ray unit has rated capacity of 200,000 v and weighs 85 lbs. Unit is an all-purpose field unit which will handle materials from thin magnesium sheets to 3-in. steel. Head is waterproof, dustproof, and weatherproof (May 20, p193).

TEMPLET CAMERA — *Robertson Photo-mechanix, Inc, 7440 W Lawrence Ave, Chicago 31, Ill.* Templet camera will enable Convair Div of General Dynamics Corp to reproduce templets, ranging in size up to 5 x 12 ft, within 0.0005-in. accuracy by projecting image of drawing onto sensitized plate of steel or aluminum, then machining or cutting resultant pattern. Unit weighs over 10,000 lb, is 30 ft long and 8¾ ft high (Sep 23, p194).

MONOCHROMATIC LIGHT — *Crane Packing Co, Dept AMN, 6400 Oakton St, Morton Grove, Ill.* Improved Lapmaster light, four times larger than present model, is 11 x 14 in. with work stage 10 in. sq. Light head may be tilted back and adjusted for height to permit maximum light on check area. For pieces too large for work stage, head may be swung completely around to permit checking on bench (Oct 7, p180).



MICROSCOPE—*Bausch & Lomb Optical Co, 635 St Paul St, Rochester 2, NY.* Toolmakers measuring microscope, for inspection and measurement of tools, drill jigs, templets, and finished parts, is designed to measure in two coordinates. Illumination source is built in. Standard magnification is 35X. Price of complete basic microscope is $1200 (Feb 11, p189).

MICROMETER STAGE — *Stocker & Yale, Inc, Marblehead, Mass.* Measured travel coordinate stage, 1 in. x 6 in., is designed primarily for use with company's lines of optical comparators, and is useful for precise measurements and micro-adjustments. Readings are made on a choice of micrometers—0.0005-in. increments or 0.0001 increments (Jun 17, p199).

PROTRACTOR SCREEN—*Walter H Glardon Co, 68 Oak St, New Rochelle, NY.* Rotating protractor screen, No. 70, is designed to fit 14-in. Portman optical comparator. Device gives full screen coverage and rotates 360°. Screen is graduated from 0 to 180° in 30° intervals in both directions from zero point. Vernier plate enables operator to read to 1° of arc. Price is $150 (Jul 29, p148).

TOOLMAKERS MICROSCOPE—*Unitron Instrument Div, United Scientific Co, 204-206 Milk St, Boston 9, Mass.* Unitron Model TM can be used for precise shop measurements and for examination of metal grain structure. Magnification is 30 to 400X. Instrument gives direct readings to 0.0001 in. in three dimensions (Mar 11, p194).

COMPARATOR — *Imported by Opto-Metric Tools, Inc, 137 Varick St, New York, NY.* Leitz 8-in. optical comparator (German) is designed so that work stage is in horizontal plane, with light beam built vertically. Other features: indexing turret for 10, 20, and 50X magnifications; retractable vertical illuminator for reflected images; rapid-acting stage for locating work against charts; and rotating circular screen for angular measurements (Feb 25, p220).

OPTICAL COMPARATOR — *Distributed by Nikon, Inc, 251 Fourth Ave, New York 10, NY.* Japanese comparator, product of Nippon Kogaku K K, permits rapid examination of tolerance limits, hard to measure dimensions and critical points. Position of light can be varied to give outline image or surface topography. Six different magnifications are available, ranging from 10X to 100X. Full line of accessories available (Feb 11, p194).

HEIGHT GAGE — *Webber Gage Co, 12912 Triskett Rd, Cleveland 11, Ohio.* Micro-Accurate permits measurements up to 61 in. with accuracies of ±0.00005 in. per in. of height. It combines company's gage blocks and Leitz measuring microscope. Basically, unit consists of a stack of gage blocks held together by spring tension. Unit is available in four models, measuring to heights of 25, 37, 49, and 61 in. (Feb 25, p202).

STAGING FIXTURES — *Automation Gages, Inc, Sibley Tower Bldg, 25 North St, Rochester 4, NY.* Multi-Stage kit is assortment of precision inserts developed to solve parts locating problem for wide range of projection gaging applications. V-type inserts handle parts from 1/32 to ½ in. in dia, while shelf-type inserts take flat or odd-shaped parts. Standard kit includes rotary locating spindle and a work plate (Apr 22, p206).

CLINOMETER — *Opto-Metric Tools, Inc, 137 Varick St, New York, NY.* Leitz (German) instrument checks inclination of machine elements to level plane or to each other. Device can also be used to obtain surface flatness during machining operations. Accuracy of optical circle and sensitivity are reported to be 15 sec of arc (May 6, p188).

PART-HOLDING FIXTURE—*Optical Gaging Products, Inc, 26 Forbes St, Rochester, NY.* Multi-Use Stage clamps quickly on worktables of standard contour projectors and optical comparators. Device is suited to staging cylindrical as well as many non-cylindrical pieces. Several interchangeable and adjustable part holders can be accommodated (Apr 8, p188).

ILLUMINATED MAGNIFIER — *Abbeon Supply Co, 179-33D Jamaica Ave, Jamaica 32, NY.* Flash-O-Lens consists of standard flashlight case and special illuminating magnifier head. Battery-powered model, 7-power, sells for $14.85; electric plug-in model, also 7-power, sells for $16.85 (Jul 29, p158).

MAGNIFIER — *Pacific Transducer Corp, 11836 W Pico Blvd, Los Angeles 64, Calif.* Model 0.185 Hands-Free is worn on person, leaving hands free. It is attached by plastic cord around neck where it can be adjusted to any height. Device has 3⅞-in. double convex lens in clear plastic frame, weighs less than 6 oz, and sells for $5.95 (Jul 29, p160).

MAGNIFIER—*Edmund Scientific Co, Barrington, NJ.* Swivel-clamp magnifier attaches to workbench, lamp, or machine tool. Device has a 4-in. dia, +5 diopter lens; lens has 8-in. focal length. Price is $4 postpaid (Sep 23, p210).

SPECTACLE LOOP—*Edroy Products Co, 480 Lexington Ave, New York, NY.* 3 D 3 Opticaid magnifies three times in three dimensions at arm's length. Unit has separate lenses for each eye; prescription lenses can be added when necessary (Dec 16, p190).

MAGNIFIER—*S B Logan & Co, 134 Mill St, Genoa City, Wis.* Precision Vision magnifier is double-lens, 5-power device which is highly corrected for spherical aberration. Two ground and polished lenses are sealed in lightweight aluminum case. Overall size is 2¼-in. dia by ¾ in. thick. Swivel clamp and stand are useful for shop applications (Aug 12, p187).

BINOCULAR MAGNIFIER — *Edroy Products Co, 480 Lexington Ave, New York, NY.* Leitz 8-in. optical compararound head and permits reading of micrometers, height gages and other measuring instruments. Available in three models, 1¾ magnification at 14 in., 2¼ at 10 in., and 2⅝ at 8 in., glasses are priced at $10.50 (Apr 22, p196).

MAGNIFIER — *Magnaglass Mfg Co, Inc, Fredonia, NY.* Six-power Magnaglass consists of 6-power lens, 1-1/16 in. in dia, mounted in transparent plastic housing. Housing contains magnets which allow magnifier to be attached to ferrous metal gage or rule. Price, including case, is $3.00 (Mar 25, p228).

SCOPE ACCESSORY — *Wales-Strippit Corp, 545 Payne Ave, North Tonawanda, NY.* Dupl-O-Scope, with fixed-focus, 4-power lens and prism, mounts on stylus bracket of company's Duplicator to optically sight-in on master circuit while company's Fabricator (AM—Dec 17, '56, p182) punches corresponding master template for printed circuits (Apr 22, p217).

MAGNIFIER—*Industrial Products Co, 2844 N Fourth St, Philadelphia 33, Penna.* Magnifier is available in four styles—bench model, hand model, with desk or table mounting, or with floor stand. All have fluorescent, shadow-free light and a 5-in.-dia lens (Sep 9, p219).

TAP INSPECTION—*Stocker & Yale, Inc, 40 Green St, Marblehead, Mass.* Accessories for use with company's Tap Analyser consist of precision chuck of 0 to ¾-in. capacity, and sets of lenses that allow inspection of larger taps by lowering the magnification to 30X, 24X and 18X (Feb 11, p183).

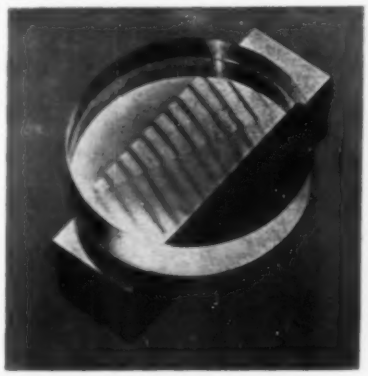
MAGNIFIER—*Eastern Machine Screw Corp, New Haven, Conn.* Inspection magnifier, called Spectifier, permits use of both eyes. Inspection can be made at all angles; no focusing devices are needed. Platform is lit by 25-w lamp. Price: $23.50 (Mar 25, p217).

MAGNIFYING GLASS — *Clarencrest Sales Co, 99 E Terrace Ave, Lakewood, NY.* Magnaglass is mounted in transparent housing and fitted with magnets that cling to any magnetic material. Device can be positioned at any angle on tool, provides 6X magnified readings of scales (Jan 14, p185).

TOOLMAKER'S PROJECTOR — *Stocker & Yale, Inc, Marblehead, Mass.* Toolmaker's projector has illuminated screen tolerance lines which provide exceptional contrast and thus permit easier, more accurate measurements. Measuring capacity is up to 6 in. in one setting. Two series of micrometer stages are provided—1 x 2 in. and 1 x 6 in. (Sep 23, p196).

CONTOUR PROJECTOR—*Distributed by Bentley Trading Co, 41 E 42 St, New York 17, NY.* Model WP 100 universal projector, product of Optical Measuring Tools Ltd, Maidenhead, England, is designed for inspection of contours and for visual finishing of profile gages while actually projected on 60 x 40-in. screen. Magnifications of 10, 20, 50, and 100 x available (Jul 29, p148).

SPECTROMETER — *Distributed by Engis Equipment Co, 431 S Dearborn St, Chicago 5, Ill.* Guild-Watts spectrometer has two telescopes and is used to measure gage block setups and instrument assemblies. One divided circle is used to read both table and telescope positions. Auto-collimating eyepiece, which permits telescope to be used as auto-collimator, is available (May 20, p202).



OPTICAL FLATS—*Van Keuren Co, 176 Waltham St, Watertown, Mass.* Micro-Koted Flats are made of fused quartz and are coated with a hard, durable, metallic material which will not peel or rub off. Width of dark fringe is less than half the width of ordinary fringes, or equivalent to about 0.000001 in. of height. Fringe boundaries are more clearly defined (Sep 9, p196).

STEREO MICROSCOPE — *Edmund Scientific Co, Barrington 17, NJ.* Microscope suited for inspections, counting, checking, and assembling gives clear, sharp images, non-reversed on a wide 3-dimensional field. Standard wide-field eyepieces give 21X and 34X magnifications. Working distance up to 3 in. allows inspection of relatively large pieces. Price is $99.50 (Mar 25, p209).

CHART LAYOUT INSTRUMENT—*Automation Gages Inc, Sibley Tower Bldg, Rochester 4, NY.* Instrument permits making chart-gage layouts directly on the viewing screen of optical projectors; provides a fast and accurate means of checking accuracy of charts furnished by vendors; and also serves as a means of checking accuracy of magnification of the optical projector itself (Dec 2, p158).

OPTICAL MEASURING INSTRUMENT—*Gaertner Scientific Corp, 1201 Wrightwood Ave, Chicago 14, Ill.* Coordinate cathetometer makes both a horizontal and vertical measurement in a vertical plane at one setting. Device consists of microscope or telemicroscope mounted on carriage which is moved up and down on a vertical bar. This assembly is moved left to right or vice versa on horizontal ways (Sep 9, p200).

SURFACE ILLUMINATOR — *Portman Instrument Co, Inc, Town Dock Rd, New Rochelle, NY.* Surface illuminator, for use on company's and other makes of optical comparators, consists of lamp housing with high intensity lamp and lens system, and pair of reflecting mirrors and brackets. Mirrors are used in parallel; first mirror reflects light on part, second returns beam (Aug 12, p190).

OPTICAL TESTER—*Distributed by Engis Engineering Co, 431 S Dearborn St, Chicago 5, Ill.* Watts Microptic Auto-Collimator has new micrometer drum that permits direct reading to 0.1 sec of arc. Optical and electrical systems have been improved (Feb 11, p161).

INSPECTION and LAYOUT—indicators, controllers, layout

INDICATOR—*Bristol Co, Waterbury 20, Conn.* Indicator can scan up to 48 remote points, is equipped with numbered pushbutton switches. Offered primarily in resistance thermometer and pyrometer models, it can also be supplied for measuring other variables (Apr 8, p204).

TEMPERATURE REGULATOR — *Robertshaw-Fulton Controls Co, Fulton Sylphon Div, Box 40, Knoxville, Tenn.* No. 997 closes automatically to prevent overheating in case thermostatic unit is damaged. 4⅝-in. bellows assures powerful response in controlling flow of steam, hot water, or other medium. Sizes are from ¼ to 2 in. (Mar 11, p200).

TIMER—*Trumeter Co, 38 West 32nd St, New York 1, NY.* British-made unit consists of a pre-determined counter coupled to a special synchronous motor. Unit can be supplied to record up to 99,999 hr and can be used to shut down machines for periodic inspection and maintenance. It has many applications in time study (Oct 21, p220).

STEM THERMOMETER — *Pacific Transducer Corp, 11836 W Pico Blvd, Los Angeles 64, Calif.* Thermometer features two following pointers that indicate max and min temperatures reached since last reading. Thermometer is made of stainless steel, has bimetallic-type direct drive. Accurate to 1% over entire scale, it is available in 7 ranges (Mar 25, p210).

TEMPERATURE CONTROLLER — *Thermo Electric Co, Saddle Brook, NJ.* Multipoint pyrometer controller permits automatic temperature control of 4 to 10 separate units with one instrument. It is applicable to almost any 2-position control action. Many ranges are available between —400 and + 3250 F for standard thermocouple calibrations, and from —100 to + 1600 F for resistance bulbs (Mar 25, p202).

INDICATING DEVICE — *Charles W Schneible Co, 32 Lee Court, New Rochelle, NY.* ForcOmeter measures any mechanical load, force or thrust by converting it to hydraulic pressure. Diaphragm-type assembly does converting, pressure is indicated on dial gage. Model 150 ranges from 15 to 100 lb; model 300 ranges from 50 to 500 lb (Feb 25, p206).

COUNTER — *Ram Meter, Inc, 1100 Hilton Rd, Ferndale, Detroit 20, Mich.* Device differentiates between idling, dry run, and load cycle; counts only operations actually performed. Telemetering features permit simultaneous counting at machine and at remote location. It is available with resettable 6-digit counter, speed up to 1000 counts per minute; power consumption is 25w (Jun 17, p192).

COUNTER — *Performance Measurements Co, 15301 W McNichols Rd, Detroit 35, Mich.* Portable electronic counter consists of input amplifier, pulse shaper, plug-in electronic decade unit, and 5-digit mechanical register. Capable of 12,000 counts per minute, it operates on 105-125 v ac (Apr 8, p206).

COUNTING DEVICE — *Pneumaticount, 3400 NE 54th Ave, Portland, Ore.* Counter screws into line controlling any air or hydraulic cylinder and can be installed in five minutes. Models are available for from 1 to 5000 psi, and up to 300 counts per min (Jan 14, p168).

SURFACE PYROMETER — *Pacific Transducer Corp, 11836 W Pico Blvd, Los Angeles 64, Calif.* Pyrometer affords easy, quick method of obtaining accurate (2% over entire scale) temperature of small surfaces normally difficult to check without expensive equipment. Model 321SL-IC has range of 50-650 F; Model 321S-IC, 0-1600 F; Model 321S-CA, 0-2300 F. Price is $64.50 (Aug 12, p184).

SPEED-FEED METER — *Maico Co, Inc, Industrial Div, 21 North 3rd St, Minneapolis, Minn.* Model MF-2 meter measures and indicates linear rate of travel and rpm on machines where accurate feeds must be maintained. Feed rate pickup converts linear motion into electrical signal that is read directly. Speeds as low as 0.25 and as high as 125 ipm can be measured (Feb 11, p170).

TEMPERATURE CONTROL—*Assembly Products, Inc, Chesterland, Ohio.* Sensitivity of thermistor bridge circuit is combined with contact meter-relay in temperature-control package which has been added to Simplytrol line of controls. Device acts upon changes as small as 0.075 F. Thermistor sensing elements can be located up to 200 ft from controller. Controls have indicating accuracy of ± 2% of span of meter (Feb 25, p202).

INDICATORS AND CONTROLLERS —*West Instrument Corp, 4361 W Montrose Ave, Chicago 41, Ill.* Designed for use with resistance thermometers, line of single and multi-point models comes in standard and double-scale ranges from —100 to +500 F. Accuracy reported to be ½% of range (Mar 11, p208).

PYROMETER—*Illinois Laboratories, Inc, 420 N La Salle St, Chicago 10, Ill.* Type R-4200 combines convenience of portable unit with protection of wall-mounted unit. Device is available with flexible arm and choice of ten thermocouples in standard ranges from 0-300 to 0-2000 F. Centigrade equivalents and special ranges are also offered (May 20, p220).

DATA RECORDER—*Standard Instrument Corp, 657 Broadway, New York 12, NY.* Model SR Recorder-Totalizer features continuous sprocket-driven strip chart which maintains positive, accurate timing. Each chart roll contains 250 lineal feet of printed chart; markings are available for speeds from 1 in. per hr. to 10 in. per min. An elapsed-time meter registers accumulated "on" or productive time. Price is $65 (Jun 17, p202).

COUNTERS—*Bankers & Merchants, Inc, 3227 N Sheffield Ave, Chicago 13, Ill.* Tally-King automatic counters are available in six models. No. TK-4, available in either ratchet or revolution design, incorporates a mechanism that causes it to stop automatically if error occurs. This model counts up to 99,999 at speeds up to 2000 counts per minute; others produce total counts from 9999 down to 99 (Sep 23, p207).

GAGE BLOCK MAINTENANCE KIT —*DoAll Co, Des Plaines, Ill.* Kit consists of a black granite-diorite deburring stone, camel's hair brush, insulated forceps, package of industrial lint-free wiping tissues, two booklets on gage blocks, and two aerosol-type sprays for cleaning and preserving the blocks. This kit is now supplied with each gage block set of 38 pieces or larger (Dec 16, p192).

GAGE BLOCKS — *Brown & Sharpe Mfg Co, Providence 1, RI.* Johansson Thrift Blocks have accuracy and parallelism of ±.00008 in. with surface finish from 1.0 to 1.5 mu-in. RMS. Flatness is within .00006 in. They are economy priced and give Class B accuracy. Two sets available: one has 84 blocks; the other 36 blocks (Mar 11, p188).

GAGE BLOCKS—*Dearborn Gage Co, Ellstrom Standards Div, 22036 Beech St, Dearborn, Mich.* Blocks have tolerances of plus eight millionths, minus nothing, for working accuracy blocks; plus four millionths, minus nothing, for inspection accuracy. Blocks automatically pick up a guaranteed minimum wear factor equal to the minus tolerance eliminated (May 6, p184).

GAGE BLOCKS — *DoAll Co, Des Plaines, Ill.* Shop-Blocks are accurate to +0.00006 in. and —0.00002 in. from marked size. Flatness and parallelism are held within 0.00004 in.; surface finish is 0.8 (arithmetical avg). Set 860, $265, contains 84 blocks ranging from 0.060 to 4 in. Set 380, $130, contains 36 blocks. Wear blocks are available for either set (May 6, p176).

TOOL SETTING GAGE—*Brown & Sharpe Mfg Co, Providence, RI.* No. 624 Planer and Shaper Gage, has beveled ways which eliminate side-play and provide accurate alignment and parallelism between working surfaces. With an extension, gage has range from ¼ to 10 in. It has precision level, and accommodates post for indicators and other accessories (Sep 23, p196).

MITER GAGE—*Diamond Tool Co, Box 32, South Haven, Mich.* Angle-Set miter gage is designed for use on tilt tables of carbide tool grinders. It can position tools at extremely small or large angles while sharpening. It can be assembled in four different positions to give a complete 180° selection of tool rest positions (Dec 16, p176).

CAM LAYOUT DEVICE—*Connecticut Automatic Methods Co, Naugatuck, Conn.* Cam-Puter is a sliderule-type device which shows the exact amount of cam cut-down; shows if and by how much turret tool clears bar end when indexing; shows if screw adjustment is needed. Instrument is designed for all three machines—00G, 0G and 2G. Separate units are available for each machine if desired (Dec 16, p166).

INDICATOR HOLDER—*L A Starrett Co, Athol, Mass.* Indicator holder, designated 657AA, is furnished with the Starrett 657 magnetic base. In addition, it includes a ⅜-in.-dia upright post; a sleeve which holds the stem of the indicator and can be positioned at any height on upright post; a sleeve which can be positioned along the rod; and an indicator attachment which holds lug-back indicators (Dec 2, p156).

MAGNETIC-BASE TOOL — *Brown & Sharpe Mfg Co, Providence, RI.* Magnicator Junior comes in two sizes with a variety of accessory dial indicators, lights, and magnifiers. Blue plastic magnetic bases can be turned on and off by fast-action switch. Magnetic strength of larger model reaches 125 lb. Smaller model can be mounted on surfaces as small as ¾-in. dia (Dec 16, p176).

SURFACE PLATES—*Machine Products Corp, 6771 E McNichols Rd, Detroit 12, Mich.* Diabase (black granite) surface plates, angles, and parallels are reported to have low coefficient of thermal expansion, high resistance to wear, and freedom from chemical alteration (Jun 3, p168).

SURFACE PLATES—*Herman Stone Co, Dayton, Ohio.* Gray granite surface plates are said to have extra hardness and natural relief areas. Special lapping, as is required for diabase, is eliminated (Feb 11, p164).

SURFACE CALIBRATOR — *Rahn Granite Surface Plate Co, 644 N Western Ave, Dayton, Ohio.* Planekator locates a theoretically perfect plane over the surface plate. Indicator readings are then taken between the perfect plane and the surface plate and recorded on a chart. Instrument has indicator base which will take any indicator made to American Gage Design AD2 dimensions (Sep 9, p224).

PLASTIC SURFACE PLATE — *Renauld Plastics, Inc, 5422 S Cedar Rd, Lansing 17, Mich.* Fine grain granite-in-the-rough is coated with special Ren plastic developed to give smooth hard surface on plates which are reported to be accurate within 0.002 TIR of true plane across corners. Plates come in eight sizes from 24 x 60 in. to 72 x 96 in. with 2, 4, or no ledges. Thicknesses are 6, 8, 10, and 12 in. (Aug 12, p176).

SURFACE PLATE STANDS—*Collins Microflat Co, 3249 W El Segundo Blvd, Hawthorne, Calif.* Steel stands for black granite surface plates are made of heavy-gage angle iron and are reinforced to withstand from three to six times the weight of the respective surface plates. Stands have a standard working height of 36 in. and range in size from 12 x 18 in. to as large as 10 x 20 ft (Oct 7, p190).

SURFACE PLATES—*DoAll Co, 254 N Laurel St, Des Plaines, Ill.* Valu-Plates made of black granite-diorite are available in four sizes—8 x 12, 12 x 18, 18 x 24, and 24 x 36 in. Portable and inexpensive, plates are non-magnetic and have a non-abrasive surface that is lapped to an over-all accuracy of 0.0002 in. (Jul 29, p162).

SCRIBERS—*Challenge Machinery Co, Grand Haven, Mich.* Magnesium scribers for use in tooling, styling, model, and pattern shops, weigh 12 oz per ft, and are available in six standard sizes up to 48 in. in length. Tip provided is hardened and ground tool steel. Details in brochure 824 (Dec 16, p194).

SCRIBER—*Greist Mfg Co, New Haven 15, Conn.* Slim-Line Micro-Scriber is designed for close and fine scribing on all metals as well as plastics, ceramics, and glass. Tip of pencil-shaped tool is alloy consisting of 95% tungsten carbide and 5% cobalt, and is ground and lapped. Scribers are priced at $1 and are shipped 24 to a carton (Aug 12, p184).

SCRIBER — *Greist Mfg Co, New Haven 15, Conn.* Micro-Scriber can scribe or etch all metals, glass, plastics, gems and ceramics. Solid-carbide tip is ground and lapped and is secured within tool. Price is $1 (Feb 11, p194).

MARKING STYLUS — *Arch Crown Tags, Inc, 277 Halsey St, Newark 2, NJ.* Perma-Scribe can be used for permanent marking on metals of all degrees of hardness, all plastics, wood, or glass. Price of penshape unit is $1 (Jun 17, p227).

TOOLMAKER'S INK—*Crown Industrial Products Co, Dept AMN, 713 Amsterdam St, Woodstock, Ill.* Ink is available in aerosol container, supplied in 6 and 12-oz sizes. Product reportedly will not flake or peel, adheres to all metals, glass, and plastic, resists heat when dry (Dec 16, p190).

HEIGHT GAGE—*Standard Gage Co, Inc, Poughkeepsie, NY.* Check Master height gage is designed as a companion device for company's Check Master test indicator (AM—June 18 '56, p188). Because the test indicator responds to dimensional variations as low as 0.00002 in., the height gage has been designed to give consistent "tenth" accuracy (Oct 21, p220).

MICROMETER HEIGHT GAGE — *Foster Supplies Co, 6122 Milwaukee Ave, Chicago 30, Ill.* Absolute positive action is controlled by indexing at 0.500-in. intervals by means of hardened steel balls set in stainless steel column of the newly designed Microball unit. Intermediate settings are made by operating micrometer gage incorporated in the unit, reading direct to within a tolerance of 0.0005 in. (Nov 4, p201).

HEIGHT GAGE—*Greist Mfg Co, 485 Blake St, New Haven 15, Conn.* Micro-Height with 4-in. capacity has same features as previously announced 2-in. model (AM—Oct 24 '55, p192). Risers in 1, 2, 3, 4, 5, and 6-in. sizes extend unit's capacity to 11 in. Device is priced at $57 (Jun 17, p200).

HEIGHT GAGE—*V-Way Gaging Co, 81 Delawanna Ave, Clifton, NJ.* Gage composed of V-grooved blocks is a self-mastering unit. The V-grooves, at precise 1-in. intervals, rigidly hold the instrument arm in position. The scriber square may be removed instantly for direct reading with the micrometer (Nov 4, p203).

DIVIDER SETTING DEVICE — *Distributed by Air Transport Equipment, Inc, Albany Ave, Amityville, LI, NY.* Leytool is British product designed for draftsmen, engineers, layout men, and toolmakers. Silver-plated vernier scale permits accuracy in setting to 0.001 in. Price: $7.50 (Jun 17, p230).

DIVIDER—*L S Starrett Co, Athol, Mass.* Series 92, 9-in. heavy-duty instrument holds standard long pencil or a steel point. Check nut, spring, and quadrant adjusting nut permit fine adjustments for close measurement. Units of similar design are furnished in 6, 7, and 8-in. sizes (Oct 18, p222).

CENTER FINDER—*C & B Tool & Machine Co, 2944 W Franklin St, Elkhart, Ind.* Center Finder comes in 3 sizes: one for establishing centers in holes ranging from 1 to 2½ in. in dia, one for holes from 2½ to 6½ in. and one for holes from 6½ to 15½ in. in diameter. Ccw turn of Allen wrench extends three equal-length machined pins which make contact with inside wall of hole (Apr 8, p186).

STRAIGHT EDGES—*Challenge Machinery Co, Grand Haven, Mich.* Straight edges, semi-steel, dove tailed, for checking accuracy in scraping dove tails of machine tool beds, are available from 18 to 84 in. in length, in nine standard sizes. Working surfaces are accurate to within 0.0002 in. TIR. Standard unit has one side at 45° angle (Dec 2, p162).

INSPECTION EQUIPMENT — *Challenge Machinery Co, Grand Haven, Mich.* Magnesium and aluminum universal angle plates, height blocks, patternmakers' angle plates, tooling angles, straightedges, and parallel straightedges are hand-scraped and are accurate to within 0.0002 in. TIR (Sep 23, p206).

GRANITE RISER BLOCKS—*Herman Stone Co, 1860 N Gettysburg Ave, Dayton, Ohio.* Granite riser blocks facilitate height gage readings on parts with higher-than-normal checkpoints. They provide accurate surfaces parallel to the working surface plate and at an elevation sufficient to allow use of standard height gages. Blocks, available in various heights and shapes, have top and bottom surfaces flat within 0.000050 in. and parallel within 0.000075 in. (Dec 30, p126).

LAYOUT COMPASS—*Titan Tool and Supply Co, Inc, Dept B, 1419 Hertel Ave, Buffalo, NY.* Compass is beam type with scale acting as beam. Removable phonograph needles are used as points in compass and in companion scriber. Vernier reads to 0.001 in. Scales are available in 6 or 12-in. size (Mar 11, p211).

CENTER-FINDER — *Armand Products, Inc, 20 W Morrill Ave, Columbus, Ohio.* Battery-powered unit called Wiggler fits into lathe chuck, drill-press, jig bore or other machine and enables operator to locate blueprint coordinates of workpiece. Electrical contact lights bulb continuously when work is properly centered. Standard batteries are used (Mar 25, p209).

SINE PLATE—*Brown & Sharpe Mfg Co, Providence, RI.* Sine plate, No. 925, has over-all accuracy within 0.0002 in. End plate is held in place by three screws and the sine plate itself has tapped holes in sides, ends, and top for application of special plates or holding devices. Working surface of hinged plate is 3½ x 6 in.; center distance between rolls is 5 in. Price is $110 (Sep 9, p200).

COMPOUND SINE PLATE — *Bald Eagle Corp, 356 Cedar St, St Paul 1, Minn.* Model 1905 allows setting up of both compound and single angles. Rolls are hardened and ground to same dia within 0.0001 in.; other dimensions are held to tolerance of 0.0002 in. Top plate is 6¼ in. square and has 3 T-slots. Base and middle plate each have 0.2000-in. recess. Unit comes in oak case (May 20, p202).

SINE PLATES—*Bald Eagle Corp, 356 Cedar St, St Paul 1, Minn.* Both single and compound-angle hinged types are now available with dual-field permanent magnetic chucks that allow each side to be magnetized or demagnetized independently. Central T-slot between the chucks can be used to hold another guide to help position small pieces (Dec 2, p151).

American Machinist

1958 PRODUCTION PREVIEW

PLANT SERVICE EQUIPMENT

FORK-LIFT TRUCK — *Automatic Transportation Co, 149 W 87 St, Chicago 20, Ill.* Heavy-duty fork-lift truck called Elbolift does away with conventional mast assembly and has a capacity of 12,000 to 20,000 lb and maximum lift of 10 ft. Special compensating linkages permit loads to be lifted vertically. It has four speeds—either forward or reverse. Truck has overall height of 80 in., width of 48 in. (Sep 23, p189).

FORK LIFT ATTACHMENT—*Lewis-Shepard Products, Inc, Dept R-5, 125 Walnut St, Watertown 72, Mass.* Attachment consisting of multiple forks, side-shifter, and push-off device, is designed for use with company's Model E trucks and permits handling of normally palletized goods without aid of pallets (May 20, p220).

HYDRAULIC SKID LIFT — *General Sales & Engineering Co, 4525 N Clark St, Chicago 40, Ill.* Self-propelled unit can hold full load at any height with its motor off. Three models are available with capacities of 2000, 3000, and 4000 lb. Raised heights are 36, 52, and 68 in. with lowered height of 6½ in. (Jan 14, p177).

LIFT TRUCK—*Hyster Co, 2902 N E Clackamas St, Portland 8, Ore.* Pneumatic-tire lift truck, Model 70, is designed to work over rough terrain. Truck, which can handle 7000 lb, has turning radius of 100 in. and length of 106¾ in. Large bore and stroke enables 70-hp engine to develop torque of 182 ft-lb at 1200 rpm (May 6, p202).

BOOM ATTACHMENT — *Yale & Towne Manufacturing Co, Materials Handling Div, 11,000 Roosevelt Blvd, Philadelphia 14, Penna.* Worksaver trucks are available equipped with a swinging boom to which a ½-ton-capacity Yale spur gear trolley-type hoist is attached. Boom, of 4-in. I-beam construction, slews through 180°, permitting positioning of hoist over a conveyor line on either side of truck. Capacity of boom is 750 lb (Dec 2, p154).

FORK TRUCK — *Mercury Mfg Co, 4044 S Halsted, Chicago 9, Ill.* Gasoline-operated Model 430-G fork truck has 4000-lb capacity and features ease of operation and maintenance. Truck is available with either Duoscopic (2 to 1 ratio) or Triscopic (3 to 1 ratio for extra high free-lift) hoist system. Truck can be equipped for LP-gas operation (May 20, p200).

LPG-ELECTRIC POWER UNIT — *Ready-Power Co, 3826 Grand River Ave, Detroit 8, Mich.* Model W12, designed to fit electric-powered hand trucks, features instantly available, continuous-duty electric power plus economy of LP-gas operation. Unit accommodates interchangeable 20-lb fuel cylinder (Apr 22, p212).

SIDE SHIFTER — *Yale & Towne Manufacturing Co, Materials Handling Div, 11,000 Roosevelt Blvd, Philadelphia 15, Penna.* Attachment for gasoline powered trucks in capacities of 15,000 to 20,000 lb is a swing-shift, side-shift hydraulic device controlled by separate handles. It can shift the truck forks and load 6 in. to either side of center, permits slewing forks and load in a 10° arc in either direction from normal position (Dec 16, p192).

FORK TRUCK — *Prime-Mover Co, Muscatine, Iowa.* Model L-10 weighs 1050 lb, lifts 1000-lb load 6½ ft in 6½ seconds. Unit is 31½ in. wide; mast when tilted back will clear a 6-ft 8-in. door. Truck is powered with 6.8-hp air-cooled engine. Fork lift components can be replaced with dumping hopper or flatbed (Jun 3, p162).

INDUSTRIAL TRUCK—*Prime-Mover, Co, Muscatine, Iowa.* 1½-ton-capacity flatbed truck reportedly is first to use hydraulic torque converter. Truck has top speed of 12 mph, and is powered by 15-hp air-cooled engine. Higher speeds can be obtained by changing gear ratio. Two flatbeds are available: 42 x 42 in., and 42 x 60 in. Bulk handling bed is interchangeable with flatbeds (Apr 8, p176).

EXHAUST PURIFIER — *Yale & Towne Mfg Co, Automatic Transportation Co Div, 149 W 87 St, Chicago 20, Ill.* Oxy-Muffler reduces amounts of organic material and CO in exhaust gases of company's Dynamotive line of industrial trucks. Reaction between catalyst and exhaust gases reduces amounts of hydrocarbons and CO 70% to 95% for minimum of 1000 hr (Jul 29, p162).

HYDRAULIC LIFT TABLE—*Crown Controls Co, Inc, New Bremen, Ohio.* Model L-103 is designed to operate in close quarters. Manual operation of hydraulic pump raises load to desired level; lowering is accomplished by opening release valve. Lifting height is 48 in.; over-all height of unit is 60 in.; platform measures 15 x 20 in. (Dec 2, p160).

LPG FUEL SYSTEM—*Clark Equipment Co, Industrial Truck Div, Battle Creek, Mich.* System is available as optional power on new Clarklift line of fork trucks. Safety features include a 375-psi relief valve built into tank, excess-flow check valve, fused vacuum switch, and tank guard. Truck and LPG components have UL approval (Oct 7, p195).

LIFT TRUCK—*Hustler Corp, Church & Elm St Plant, 17871 Elm Rd, Willoughby, Ohio.* Electric lift truck, designated Pug, is available in 1000, 2000, and 3000-lb capacities and has been re-engineered to provide a smaller, more maneuverable truck at lower cost. Measuring 60 in. long, the truck has a minimum turning radius of 52 in. Truck has 4 forward speeds up to 6 mph plus reverse, and is powered by 24-v lead-acid batteries (Nov 4, p186).

CLAMPING ARMS — *Lewis-Shepard Products, Inc, 688 Walnut St, Watertown, Mass.* Attachment known as Cascade fits company's Master line of trucks, and may be used for palletless handling by clamping load, or for pallet loading by using clamping arms as forks. Clamping arms rotate 90°. As a clamp, unit has max adjustment of 63¾ in. between arms, minimum of 16 in. Pallets up to 30 in. wide can be handled (Feb 25, p208).

MATERIALS HANDLING TRUCK—*Stratton Equipment Co, 2040 E 105 St, Cleveland 6, Ohio.* Unit called Multi-Lift converts, in seconds, to any one of five special units—platform lift, fork lift, barrel handler, crane or bumper-jack. Equipped with fingertip controls, truck has electrically-operated lifting system. A manually operated unit and a non-telescopic model are available (Dec 30, p134).

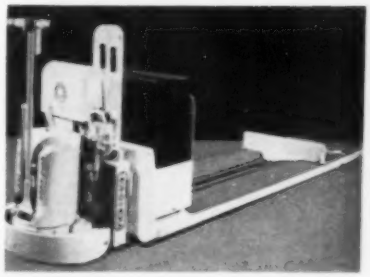
OPERATOR-LED TRUCKS — *Automatic Transportation Co, Div of Yale & Towne Mfg Co, 149 West 87 St, Chicago 20, Ill.* Models WT-2A and 4A measure only 35½ in. in length. Model WT-2A has a rated drawbar pull of 200 lb with an ultimate of 700 lb, while its companion, the WT-4A, has a normal drawbar pull of 400 lb with an ultimate of 700 lb. Trucks can make a U-turn in a 4-ft aisle (Aug 12, p166).

ELEVATING TRUCKS — *American Pulley Co, 4200 Wissahickon Ave, Philadelphia 29, Penna.* Safeway line includes fork, platform, drum stackers, straddle models. Max loads are 1000 lb for pedal-operated units; 1500 lb for battery-powered. Standard models lift up to 94 in. (Apr 8, p195).

HYDRAULIC LIFTS—*Crown Controls Co, Inc, New Bremen, Ohio.* Line of Crown E-Z lifts has been expanded by addition of series of electrically operated hydraulic lifts. Model RL1250-56, 1250-lb-capacity fork lift, will raise loads to 56 in. above floor. Two other models lift loads to 66 and 76 in. (May 20, p206).

FORK TRUCK—*Pettibone Mulliken Corp, 141 W Jackson, Chicago, Ill.* Speed-lift line (gasoline or LP-gas operated) eliminates clutch, transmission, differential, drive shaft, and differential axle. Engine turns hydraulic pump which actuates hydraulic motor. Weight of truck is 4380 lb; overall length, less forks, is 84 in.; speeds up to 11 mph (Sep 9, p202).

MOTOR TRUCK — *Stockvis-Edera & Co, Port Washington, NY.* Gasoline-powered Multiton-Excelsior consumes 1 pt of fuel per hr, has 1500-lb capacity, low bed for easy loading, and can be used to haul loaded trailers. Unit has three speeds, forward and reverse, three-wheel brakes, pneumatic tires. Price is $645 fob (Mar 25, p210).

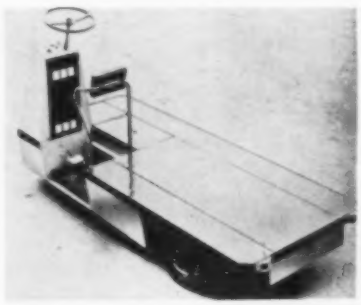


PLATFORM TRUCK—*Moto-Truc Co, 1959 E 59 St, Cleveland 3, Ohio.* Walkie-type truck has a 8000-lb-capacity pusher bar which has 85-in. travel. Truck is 135 in. long by 39 in. wide. Platform has lowered height of 2⅝ and a lift of 4¾ in. (Sep 9, p206).

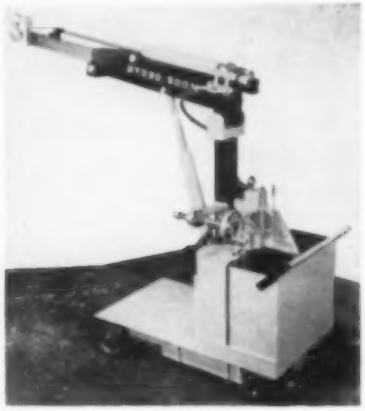
LIFT TRUCK—*Yale & Towne Manufacturing Co, Yale Materials Handling Div, 11,000 Roosevelt Blvd, Philadelphia 15, Penna.* Diesel-electric platform model is designed to provide 2 ft 4 in. of lift hydraulically. Total weight is 77,000 lb; truck is 21 ft 4 in. long; die carrying platform is 13 x 8 ft. Unit, driven by four 36-in.-dia wheels, steers hydraulically through eight sets of caster wheels (Sep 23, p196).

TRACTOR—*Moto-Truc Co, 1959 E 59th St, Cleveland 3, Ohio.* Side-hitch tractor operates from alongside trailer; coupling is made by an electric-hydraulic clamp which engages underside of trailer frame. Unit is designed to move conveyors loaded with materials which overhang ends too far to make end coupling possible. Tractor is 33 in. wide, 44 in. long, and is powered by a 12-v battery (Apr 22, p192).

HYDRAULIC LIFT—*Crown Controls Co, Inc, New Bremen, Ohio.* Crown E-Z Lift, available in 500- or 1000-lb capacities, has die-handling table fitted with six rollers. Front of table has adjustable steel retainer to keep die on table during moving process. Unit has lift of from 7 in. above floor to 57 in. above floor (Jun 3, p164).



FLAT-TOP TRUCK — *Victor Adding Machine Co, 3900 N Rockwell St, Chicago 18, Ill.* Three-wheel, flat-top industrial truck, called the One-Ton Lugger, runs on batteries, has capacity of one ton and can make a 90° turn at an aisle intersection as narrow as 7 ft. Unit is 108 in. long and 42 in. wide, and has speed of 6 mph when fully loaded. The price is estimated at $2200 to $2900 (Dec 2, p164).



BOOM TRUCK—*Vanguard Engineering Co, 1908 E 66 St, Cleveland 3, Ohio.* Hydro-Boom truck, Model 110, positions work loads to within 0.01 in. Capacity at max boom extension is 1500 lb, or 2500 lb retracted. Travel of the boom crosswise is 28 in; longitudinal, 28 in; vertical 90 in. Unit is 32½ in. wide and is available in hand-operated or battery-powered models with or without power propulsion (Oct 21, p214).

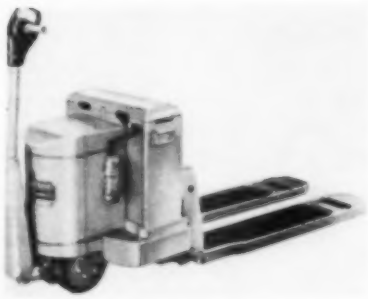
TRUCK CONTROLS—*Lewis-Shepard Products, Inc, Watertown, Mass.* Control system for company's line of High-Lift and Low-Lift "walkie" trucks is designated Roto-Cam control. Traction speeds are produced by rotating rubber grip. System is said to be first to offer both dynamic braking and controlled plugging (Aug 26, p166).

MAINTENANCE TRUCK — *Stokvis-Edera & Co, Inc, 18 Secatoag Ave, Port Washington, NY.* Truck has workbench and compartment space for holding tools. Powered by 2¼-hp Briggs & Stratton engine, truck is available in both gasoline and LP-gas models (Apr 22, p194).

FORK TRUCK—*Raymond Corp, 47-159 Madison Ave, Greene, NY.* Designed to handle loads of 14 ft or longer in aisles as narrow as 7 ft, this four-directional truck is capable of traveling forward, backward, to the left and to the right. The new design is available on the company's outrigger base fork models or on its Reach Fork trucks (Dec 30, p121).

PORTABLE HYDRAULIC ELEVATOR—*Barrett-Cravens Co, 628 Dundee Rd, Northbrook, Ill.* Designed for lifting loads of 750 lb up to 71 in., unit weighs approx 270 lb, has 24 x 24-in. platform, over-all height of 83 in. Hydraulic system allows loads to be lifted by pressure on foot pedal. Construction is of all-welded steel (May 11, p178).

TRUCK DRIVE — *Allis-Chalmers Manufacturing Co. Tractor Group, Milwaukee, Wis.* Power shift torque converter drive, offered as optional equipment, eliminates manual gear shifting on Allis-Chalmers lift trucks. Drive facilitates controlled inching of the unit to enable operator to stack loads faster and to maneuver truck into position with inching pedal (Dec 16, p190).



LIFT TRUCK—*Lift Trucks, Inc, 2425 Spring Grove Ave, Cincinnati 14, Ohio.* Model KPW, designed to give greater floor clearance and reduce pallet damage, has automatic device that gradually lowers pallet load to floor. When weight is removed, forks drop immediately to lowered position (Mar 11, p190).

LP-GAS KIT—*Yale Materials Handling Div, Yale & Towne Mfg Co, 11,000 Roosevelt Blvd, Philadelphia 15, Penna.* Kit for converting gasoline-powered lift-trucks to LP-gas consists of a fuel tank, filter, converter-regulator, carburetor, solenoid safety valve, relief valve, hoses and connections. It bears an Underwriters' Laboratory listing for "approval by report" of a field installation (May 20, p202).

MAST ASSEMBLIES—*Mercury Mfg Co, 4044 S Halsted St, Chicago 9, Ill.* Mast assemblies of new series designed for company's fork trucks feature uprights milled from solid stock, smaller rollers, and one cylinder operation. Masts permit shorter turning radius and higher lifting range, and are available in Duoscopic (2 to 1 lift ratio) and Triscopic (3 to 1 lift ratio) models (Aug 26, p182).

HAND LIFT TRUCK—*Lift Trucks, Inc, Cincinnati 14, Ohio.* Red Arrow has exclusive engagement and disengagement handle which is said to eliminate problem of the "flying handle" in hand lift trucks. No special push rods, levers, or extra foot pedals are needed. Entire lifting mechanism and safety device is controlled in the lifting arm; one foot pedal lowers load (Jun 17, p226).

LIFTING AND CLAMPING ATTACHMENT—*Yale & Towne Mfg Co, 11,000 Roosevelt Blvd, Philadelphia 15, Penna.* Lift truck unit has clamping capacity of 27 to 75 in. in width; with upper arms out of way pallets can be lifted 75 in. Unit rotates through 360°, handles loads up to 3200 lb when mounted on 5000-lb capacity truck (Mar 11, p210).

PLATFORM TRUCK—*Elwell-Parker Electric Co, 4205 St Clair Ave, Cleveland 15, Ohio.* Designed for handling odd-shaped or extra-long loads, Model L-15 low-lift platform truck has 20,000-lb capacity, and is available with either electric or gasoline-electric power, has 2-wheel drive, and all-wheel steering. Travel speeds are 5 to 6 mph without load, 4 to 5 mph with full load (Jul 15, p200).

FORK LIFTS — *Crown Controls Co, Inc, New Bremen, Ohio.* Three new models have been added to company's line of portable, battery-operated fork lift trucks. Each is rated at 1500-lb lifting capacity. Fluid is pumped into a lifting cylinder which raises load to any height between 56 and 76 in. depending on the model. Specifications include over-all width of 24 in., straddle capacity of 16 in., and a weight of 460 to 485 lb depending on model (Dec 16, p176).

BOOM ATTACHMENT — *Yale & Towne Mfg Co, Materials Handling Div, 11000 Roosevelt Blvd, Philadelphia 15, Penna.* Boom and platform attachments simplify overhead maintenance tasks involving bulky or heavy plant equipment. Platform provides 24 sq ft of working area; removable boom extends 48 in.; has capacity of 300 lb, and can be turned through 180°. Attachments fit standard fork carriage (Nov 18, p206).

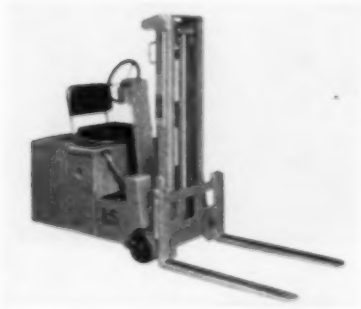
DIE HANDLING TRUCK — *Lewis-Shepard Products, Inc, Dept R-20, 125 Walnut St, Watertown 72, Mass.* Electrically powered JackStacker truck is designed to handle dies weighing as much as 7500 lb. The platform-type truck, which is equipped with a hydraulic pusher and puller, can high stack dies in storage racks, as well as transport and place them directly in the press. It has a platform elevation of 54 in. (Dec 16, p178).

FORK TRUCKS—*Mercury Mfg Co, 4044 S Halsted St, Chicago 9, Ill.* Models 730 and 830 Yank fork trucks, 7000 and 8000-lb capacities respectively, feature simplified hoisting mechanisms. Hoisting speed is 17 fpm for Model 730 and 15 fpm for Model 830 at full load. Model 730 is 126¼ in. long, 46 in. wide with turning radius of 91 in. (Mar 25, p198).

TRACTOR — *Clark Equipment Co, Powerworker Div, Battle Creek, Mich.* Battery-operated tractor can be used for both pushing and pulling operations, has normal drawbar pull of 200 lb. It has two speeds in both forward and reverse and will travel 2 mph fully loaded and 3.2 mph empty. Controls are located in steering handle (Jul 15, p196).

FORK-LIFT TRUCK — *Hyster Co, 2902 N E Clackamas St, Portland 8, Ore.* Model QX, with 2000-lb capacity on pneumatic tires, can be equipped for LP-gas operation. Optional attachments include company's Load-Grab clamp, and side-shift carriage that shifts loads and speeds handling by reducing truck maneuvering time (Mar 25, p192).

PUSH-PULL TRACTOR — *Moto-Truc Co, 1959 E 59 St, Cleveland 3, Ohio.* Heavy-duty push-pull tractor is rated at 2800-lb pull. Extra pull is provided by dual drive units working in tandem. Company's Perfect Circle steering system is used. Over-all dimensions are 37 in. wide x 55 in. long; weight is 2500 lb, less battery. Controls provide two speeds forward and reverse (Jul 1, p140).



ELECTRIC FORK TRUCK—*Lewis-Shepard Products, Inc, 125 Walnut St, Watertown 72, Mass.* Model H features 24-v electrical system, has a turning radius of 56¼ in. and can stack goods in aisles as small as 9¼ ft wide, when carrying a 48-in.-long load. Truck is available in any of four standard capacities— 1000, 1500, 2000 and 2500 lb. Collapsed heights on all units are either 68 or 83 in., with 102 or 132-in. fork elevations (Dec 16, p174).

MAST—*Knickerbocker Co, Truck-Man Div, 537 Liberty St, Jackson, Mich.* Multi-Lift gives lower silhouette while maintaining equal or higher lift. Truck having 144-in. lift has lowered height of only 72 in., about 20 in. lower than with conventional masts. Forks travel 3 in. for each 2-in. increase in mast height (May 20, p223).

TRIPLE EXTENSION MAST — *Yale & Towne Mfg Co, Yale Materials Handling Div, 11000 Roosevelt Blvd, Philadelphia 15, Penna.* Triplex mast design features three, nested, I-beam lifting members which are hydraulically raised. Mast is offered in standard heights of 59, 71, 83, 90 and 96 in. which give max fork heights of 108, 144, 180, 198 and 210 in. Unit is applicable to all Yale electric and gas-powered trucks (Dec 16, p170).

INDUSTRIAL TRUCKS — *Automatic Transportation Co, Div of Yale & Towne Mfg Co, 149 W 87 St, Chicago 20, Ill.* Hi-Skid Transporter Models WWHY-4 and 6 and WWLY-4 and 6 platform walkie-type lift trucks transport loads of 4000 and 6000 lb. WWLY and WWHY-4 capacity range is 4000 lb up to 54-in. platform length while in the WWLY and WWHY-6 it is 6000 lb up to 48-in. platform length (Jul 1, p135).

LIFT TRUCK — *Baker-Raulang Co, Box 5579, Cleveland 1, Ohio.* Model FGF-40 gas-powered, fork lift truck has length of 85¾ in., turning radius of 79 in. Capacity is 4000 lb at 24-in. load center; standard lift height is 130 in. Additional features include loaded speed of 9.5 mph, hydraulic brakes, two speeds forward and two speeds reverse (Jan 14, p166).

FORK TRUCK—*Autoquip Corp, 1140 S Washtenaw, Chicago 12, Ill.* Hydrauliphant weighs less than 3000 lb, has lift height of 108 in. and lift capacity of several thousand lb. Electrically operated truck has single-pedal drive, small steering wheel, and and extra inching speed for precise positioning (Mar 25, p202).

FORK-LIFT TRUCK—*Baker-Raulang Co, 1250 W 80 St, Cleveland 2, Ohio.* Model FTA-50, with 5000-lb capacity, has 77¾-in. turning radius, 41-in. over-all width, and a length, without forks, of 79⅝ in. Model FTA-70 has 86¾-in. turning radius, 44½ in. over-all width, and a length, without forks, of 80¾-in. Standard lift height is 120 in.; capacity is 7000 lb (Jun 17, p.204).

SPARK-PROOFING KIT — *Lamson Mobilift Corp, Box 511, Syracuse 1, NY.* Kit is used on gasoline engines in industrial trucks operated in areas where semi-hazardous fumes or elements are present. It is factory installed and consists of totally enclosed and shielded distributor, shielded ignition coil, and cables for all high-voltage ignition wires (Mar 25, p226).

HAND TRUCK—*Langley Mfg Co, Inc, 923 Cambridge St, Cambridge, Mass.* Multi-Purpose hand-operated transporter handles skids, pallets, and rolls, as well as machines and reels. Forks of Model 30 truck accommodate stringer lengths up to 36 in.; model 42, up to 48 in. Both will handle pallets up to 48 in. wide. Lift is 14 in.; lowering speeds are from 0 to 20 fpm (Jul 29, p154).

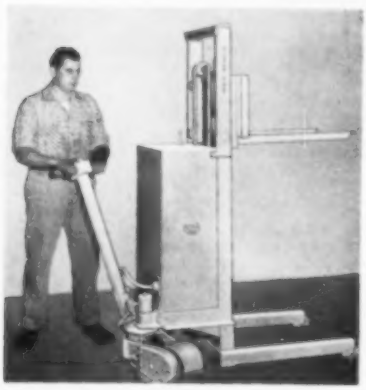
TOWING TRACTORS — *Frank G Hough Co, 928 Seventh Ave, Libertyville, Ill.* Model T-50 with 5000-lb drawbar pull and Model T-60 with 6000 are two-wheel-drive units featuring torque-converter drive and automatic transmissions. They are designed for all industrial tractor-trailer operations. Wide variety of coupler attachments are available (Nov 4, p186).

REMOVABLE FORK EXTENSIONS —*Lewis-Sheppard Products, Inc, Dept R-39, 125 Walnut St, Watertown, Mass.* Units for use with company's low-lift pallet-type trucks slip onto standard forks, doubling length of forks (Feb 11, p182).

HAND TRUCK ATTACHMENT — *Universal Hand Truck Attachment Co, 633 S La Brea Ave, Los Angeles 36, Calif.* Attachment that fits any standard hand truck is available as light-weight unit for loads up to 4000 lbs, heavy duty unit for loads to 2000 lb. Device simplifies handling, and is installed by attaching axle bar and cross bar to truck (Jun 3, p176).

REMOTE LIFTING CONTROL—*Lamson Mobilift Corp, Portland, Ore.* Device attaches to side of mast on fork-lift truck and permits operator to control lifting when he is off truck. Device is said to be especially useful for die handling (Jun 17, p226).

HIGH-LIFT TRUCK — *Lift Trucks, Inc, Cincinnati 14, Ohio.* Improved Model KHL straddle-type lift stacker is ideal for limited capacity elevators and floors. Short turning radius allows high maneuverability. Truck is made in 2000, 3000, and 4000-lb capacities. Telescopic lift reaches 128 in. (Sep 9, p200).



FORK-LIFT TRUCK — *Uhrden, Inc, Tubarlift Div, PO Box 51, Dennison, Ohio.* Tubarlift Champion Stroller has dual lifting chains, 12-v electrical system, and can lift 1000 lb to 60 in. Unit is 73¼ in. high, 53 in. long, 30¼ in. wide, and can operate in 6-ft aisle. Max lifting speed of 25-in. forks is 33 fpm (Feb 11, p166).

LIFT TRUCK — *Allis-Chalmers Mfg Co, Tractor Group, Milwaukee, Wis.* Model FT-100 has capacity of 10,000 lb. Truck has 2-speed transmission, accepts wide range of standard attachments, and is available with diesel, gasoline, or LP-gas engines (Sep 9, p198).

LIFT TRUCK ATTACHMENT—*Yale & Towne Mfg Co, Philadelphia 15, Penna.* Magnet mounted between forks insures fast, safe handling of metal plate. Device is controlled from cowl, and becomes energized as soon as load depresses switch in middle of plate (Feb 11, p176).

MOTORIZED HAND TRUCK—*Walco Supply Co, Box 652, Glendora, Calif.* E-Z Loader truck is powered by 2-hp gas engine, has three speeds forward and one reverse. Manual snap lock holds load in place. Unit weighs 275 lb and is capable of speeds up to 4 mph (Apr 8, p172).

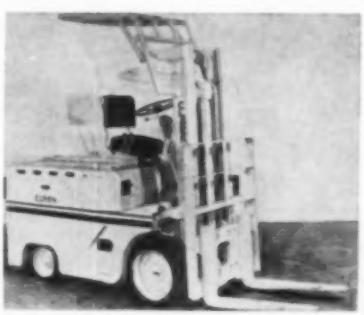
INDUSTRIAL TRUCK — *Automatic Transportation Co, Div of Yale & Towne Mfg Co, 149 W 87th St, Chicago 20, Ill.* Automatic Transporter is available with battery and battery-charger unit which can be plugged into any 115-v, 60-c, ac line. Fully discharged battery can be recharged in 10-16 hr (Apr 8, p210).

TOWING TRACTOR — *Industrial Truck Div, Clark Equipment Co, Battle Creek, Mich.* Clarktor 80 has 8000-lb maximum starting drawbar pull, four speeds forward and one reverse, wheel brakes, and automatic coupler. It has max forward speed of 16 mph, measures 56½ in. high, 107 in. long and 69 in. wide, has 146-in. turning radius (Mar 25, p198).

POWER STEERING — *Hyster Co, 2902 N E Clackamas St, Portland 8, Ore.* Power steering is now available as optional equipment for company's series of pneumatic-tired trucks in the 3000, 4000 and 5000-lb capacity range. A flow divider in the hydraulic system always directs fluid first to the power steering unit, thus assuring fast, immediate and dependable steering action (Dec 16, p193).

MATERIALS HANDLING TRUCKS —*Lewis-Shepard Products, Inc, Dept R4, 125 Walnut St, Watertown 72, Mass.* Trucks are now available with dust-resistant construction. Traction and pump motors, starting and first-speed resistors, and main contactors and timing device are enclosed. Features are available on company's electric-powered riding-high and walkie trucks, both high and low-lift (Apr 22, p220).

FORK TRUCK — *Mercury Mfg Co, 4044 S Halsted St, Chicago 9, Ill.* Model A-1484 stand-up fork truck, trademarked Yak, has 4000-lb capacity with loads up to 48 in. long. Travel speed is 6½ mph with no load and 5¾ mph with full load. Hoisting speeds are 45 fpm with no load, 30 fpm with full load. Maximum fork elevation is 130 in. (61 in. non-telescopic) (Feb 25, p210).

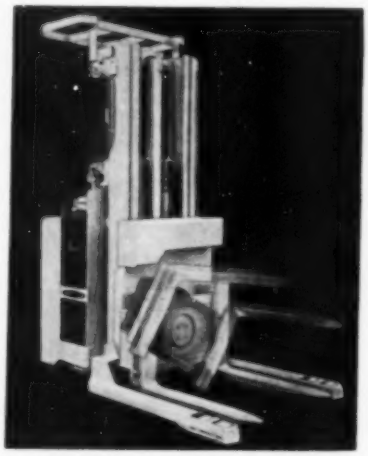


FORK TRUCK—*Clark Equipment Co, Industrial Truck Div, Battle Creek, Mich.* EUT-8024 is battery powered, has dual drive wheels, four speeds forward and four reverse, will travel loaded at 5¼ mph, and climb 10% grade. Features include turning radius of 85 in., aisle width for right-angle stacking (including 48-in.-long load) of 148¼ in., over-all length of 133 in. (Jan 14, p178).

LIFT TRUCKS—*Yale & Towne Mfg Co, 11,000 Roosevelt Blvd, Philadelphia 15, Penna.* G-3 line of trucks in 15,000, 16,500, 18,000 and 20,000-lb capacities, powered with gasoline or LP-gas, utilizes either a straight friction clutch transmission, or fluid coupling transmission. Lifting speed is 65 fpm, travel speed up to 20 mph. Units have four speeds forward and four reverse (Aug 26, p162).

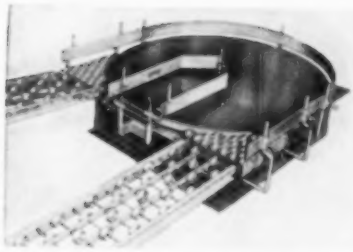
OVERHEAD GUARD—*Clark Equipment Co, Industrial Truck Div, Battle Creek, Mich.* Unit for the Clarklift line of fork trucks permits quick access to engine and does not restrict vision of operator. Unit is available in two models to fit both gasoline and LPG trucks in all size ranges from 2000 through 5000-lb capacity (Oct 7, p192).

SKID ADAPTER—*Raymond Corp, 47-153 Madison Ave, Greene, NY.* Unit permits company's 24-volt electric Walkie truck to handle both skids and pallets with loads up to 4000 lb. Frame of adapter is locked in upright position when truck is handling pallets. Adapters have same dimensions as forks—24, 27, and 30-in. widths and 30 to 60-in. lengths (Oct 7, p195).



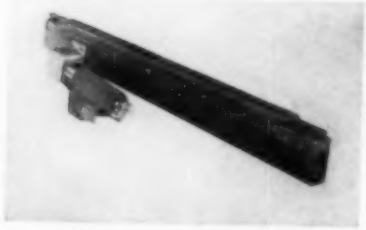
REVOLVING FORKS — *Raymond Corp, 47-147 Madison St, Greene, NY.* Revolving forks mounted on any 4000-lb-capacity Straddle Truck permit dumping operations. Powered by hydraulic motor through chain-driven sprocket and gear reduction, forks rotate 360° in either direction and are controlled by hand-operated hydraulic valve (Feb 11, p160).

HAND LIFT TRUCK—*Barrett-Cravens Co, 62 Dundee Rd, Northbrook, Ill.* Model HJ features a hydraulic lift system that permits operator to raise capacity load of 2500 lb to height of 3 in. with six strokes of handle. A 4000-lb-capacity model is also available (Oct 7, p180).



POWERED TURNTABLE — *Samuel Olson Mfg Co, Inc, 2418 Bloomingdale Ave, Chicago, Ill.* Unit has 48-in.-dia disk which is driven at 25 rpm. Unit is designed to handle either 90° or 180° turns, requires only 5 x 5 ft of floorspace, and has adjustable-height inner and outer guards (Jun 17, p192).

ELEVATING CONVEYOR — *Feedall, Inc, Willoughby, Ohio.* Special Model 4500 accepts parts in rolling position and at minimum elevation of 20 in., elevates them to max 130 in., and feeds them into production machine, assembly line, or packing unit. Unit is equipped with adjustable-speed drive (May 20, p198).



TRANSFER CONVEYOR — *Production Feeder Corp, 3130 Johnnycake Ridge Rd, Mentor, Ohio.* Conveyor speeds movement of cylindrical in-process work-pieces between machines. Model 1000 mechanizes removal and transfer of pieces of ⅛ to 1 9/16-in. diameters. Speed can be regulated between 5 and 20 fpm (Jul 29, p156).

ROLLER TURNTABLE—*Sage Equipment Co, Inc, 30 Essex St, Buffalo, NY.* Turntable is 40 in. in dia, 36 in. high, and has spring-loaded stop at the 90° points. Wheelrails may be moved apart or brought together by merely loosening and tightening adjusting nuts (Jul 1, p142).

SCREW-ON CLEAT — *T H Hinchcliffe, 1450 La Roma Rd, Pasadena 2, Calif.* Tatch-A-Cleat, made of neoprene, may be screwed onto conveyor or elevator belt. Cleats are available in heights from ⅝ to 3 in., and in widths from 1½ to 24 in. (Mar 11, p208).

CONVEYOR DRIVE — *Bunke-Musser Inc, Dept 101, Jackson Center, Ohio.* Concentro-Drive has gear reduction unit inside pulley. It can replace such drives as torque-arm reducers, geared-head motors and standard reducers. Variable speeds are attained through variable-pitch pulley on driving motor (Mar 11, p178).

BALL TABLE TRANSFER STAND —*M-H Standard Corp, 513-521 Communipaw Ave, Jersey City 4, NJ.* Stand, designated Traffic Circle, can be used as junction for 2, 3 or 4 conveyor lines, permits routing of objects from any one line to any of the others. Unit consists of a circular ball caster table on three adjustable, removable legs. At outer rim of table are four support brackets that will accommodate conveyors up to 18 in. wide (Nov 4, p186).

TABLE-TOP CONVEYOR—*Belt Corp, 820 Stahl Rd, Orient, Ohio.* Series T-44 Versa-Veyor, designed for sorting, assembling, packaging, and inspection operations, is available in belt widths of 8, 12, 18 and 24 in., has frame length of 10 ft with over-all length of unit 11 ft including end-roll assemblies. Drive unit is available for fixed belt speeds between 3 and 90 fpm and for 3-to-1 ratio variable belt speeds with lowest speed range from 3 to 30 fpm (Sep 9, p190).

TROUGHING BELT CONVEYOR—*Sage Equipment Co, 30 Essex St, Buffalo 13, NY.* Power-driven, standard-duty unit can be used for handling scrap from punch presses, or similar bulk material. Drive is mounted above the conveyor. Rubber, neoprene, or canvas belts are supplied, depending on application. Units are available in 18 and 24-in. width (Dec 2, p156).

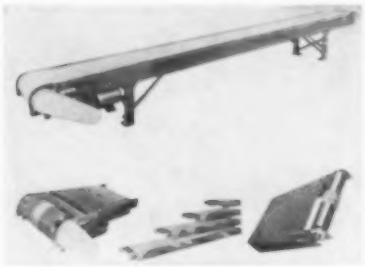
PORTABLE CONVEYOR—*Belt Corp, 810 Stahl Rd, Orient, Ohio.* Series P Versa-Veyor, available in 8, 12, or 16-in. belt widths, provides constant, uniform flow of parts in process and assures efficient handling of parts or scrap. It can be used between machines or from machine to storage or scrap containers. Normal belt speed is 60 fpm. Unit can be tilted up to 60° (Sep 9, p192).

TROUGHING CONVEYOR — *R T Sheehan Co, PO Box 545, Plymouth, Mich.* Unit designed for conveying liquids, chips, scrap, stampings, forgings, sand, or powder is hingeless, has stainless steel buckets, and has min height from floor of 14 in. Length, width, and shape are determined by application (May 20, p195).

CABLE CONVEYOR—*Tipp Mfg Co, Tipp City, Ohio.* System has standardized floor-mounted supports, consisting of hollow-pipe stanchions with standard brackets and adapters. Supports are lag-bolted to floor. Units are factory pre-assembled and shipped knocked-down (May 6, p202).

CARRIER ARM — *Chainveyor Corp, 5618 E Washington Blvd, Los Angeles 22, Calif.* Cam-action carrier for use with Chainveyor overhead-conveying system is designed to hold variety of flat materials. Automatic or manual release of special grip is obtained by slight pressure on extension of cam arm. Up to 30 lb per single load can be gripped and carried (Jul 29, p168).

MAGNETIC CONVEYOR — *Alvey-Ferguson Co, 1705 Disney St, Cincinnati 9, Ohio.* Magnetic belt conveyor transports ferrous loads at angles up to 90°. Loads are carried on a thin, rough-surface belt which moves over a metal bed containing permanent Alnico magnets. Unit is powered by positive-acting drive consisting of a right-angle gearhead motor with a roller-chain drive to the conveyor headshaft (Oct 21, p218).



PRE-FAB CONVEYORS — *Arrow Products, Inc, South Ferry St, Grand Haven, Mich.* New line of belt conveyors known as Arr-O-Unit-Veyors can be built up from pre-fabricated sections. Conveyors are available in 5 to 100-ft length for stationary operation, 5 to 25-ft length for portable use. They have belt widths from 6 to 30 in., 1/3 through 1-hp motors for fixed or variable speeds (Dec 2, p160).

CHAIN CONVEYOR COMPONENTS —*Chain-O-Flex Corp, 33½ Lincoln Avenue, Franklin Park, Ill.* Corners have been developed that are adjustable to 180° turn on a 5-in. radius for horizontal and vertical turns to 128°. Units are used in conjunction with continuous Conveyor-A-Series consisting of link chain moving in steel tubes (Apr 8, p210).

BELT CONVEYOR — *Conveyor Specialty Co, 33 Newport Ave, North Quincy 71, Mass.* Heavy-duty Unibilt Series G consists of seven basic components which can be bolted together in variety of combinations. These are: center drive unit; end drive unit; loading section; end take-up unit; vertical curve; intermediate sections; and an end unit (Aug 26, p158).

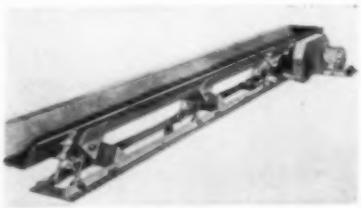
CONVEYOR — *Hytrol Conveyor Co, Milwaukee 1½, Wisc.* Light-weight unit, called Handy-Boy Model A, has aluminum bed, and full complement of wheel, stand and feeder attachments. It is available in eight sizes ranging from 6 to 20 ft in length (Feb 11, p178).

CATERPILLAR DRIVE—*E W Buschman Co, Clifton & Spring Grove Ave, Cincinnati 32, Ohio.* Caterpillar drive for Busch-Lock cable conveyors allows large-radius traction wheels to be applied to straight conveyor runs. Special dogs engage cable and trolley with equal pressure from both sides, equalizing side thrust (May 6, p213).

CONVEYOR PULLEYS — *Rockwood Pulley Mfg Co, 20 Crosby St, New York 13, NY.* Pulleys of all-steel construction, available on even diameter and in pipe-size diameters, have extra-heavy rim thickness; over-sized bores and hubs; larger-than-standard listed face lengths (Jan 14, p190).

CONVEYOR — *Homer Mfg Co, Inc, Dept 132, Lima, Ohio.* Space-Saver magnetic conveyor was developed to solve tote box loading in operations where it is necessary to locate box close to base of conveyor. Delivery section extends beyond base of conveyor. Angle of incline is adjustable so that receiving end fits under the discharge chute of all standard presses (Jun 17, p194).

CONVEYORS—*American Planter Co, Burr Oak, Mich.* Portable conveyor sections are bolted together making conveyor expandable to 32 ft from standard 12-ft length. Conveyor is made both as Model 600-ZA with rubberized belt and as Model 600-ZM with steel-mesh belt. Units are available in both 6 and 12-in. belt-trough widths. Belt speed is 135 fpm (Jul 1, p142).

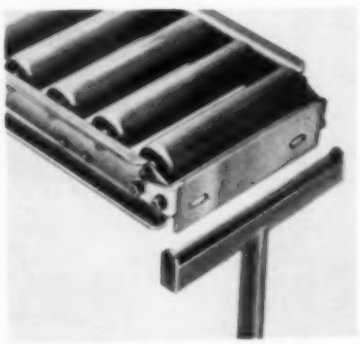


OSCILLATING CONVEYOR — *Link-Belt Co, Dept PR, Prudential Plaza, Chicago 1, Ill.* Motion is imparted to bulk material in trough by constant-stroke eccentric drive that produces upward and forward oscillating movement, resulting in continuous forwarding of materials. Available is fully assembled section of 5- to 10-ft lengths, in trough widths of 10 and 20 in. (Apr 8, p172).

TURNTABLE — *Alvey-Ferguson Co, 1505 Disney St, Cincinnati 9, Ohio.* Conveyor turntable moves items through 180° turn in 25% less space than conventional powered turntables. Designed for either live-roller or powered-belt systems, unit features endless traveling inner guide belt which insures correct tracking. Unit is powered by variable speed motor (Sep 9, p204).

VIBRATING FEEDER — *Cleveland Vibrator Co, Cleveland, Ohio.* High temperature, corrosive, and other applications are possible with completely metallic feeder. Frequency of vibration is selected by varying operating air pressure over range of 30 to 90 psi, providing control of feed rates. Feeders are available in pan, trough, or tubular construction (Apr 8, p178).

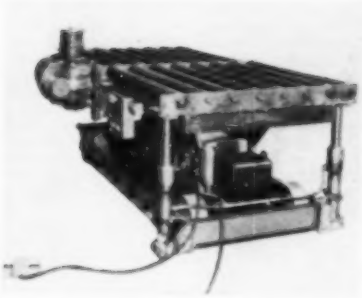
CONVEYOR—*M-H Standard Corp, 513-521 Communipaw Ave, Jersey City 4, NJ.* Aluminum Armorbelt is manufactured in 12, 18, 24, 30, 36, 42, 48, 54, and 60-in. widths and in lengths up to 200 ft. All fixed and variable speeds are available up to 60 fpm. Alloy frames can be furnished (Jan 14, p170).



CONVEYOR COUPLING — *E W Buschman Co, Clifton and Spring Grove Aves, Cincinnati 32, Ohio.* Quick-Eez eliminates hooks and rods and other standard joining methods. End plates of conveyor sections fit into slotted tops of tubular stands. Stands are available for straight or curved sections and in four sizes to provide adjustable heights from 12 to 48 in. (Sep 23, p210).

CATERPILLAR DRIVE—*E W Buschman Co, Clifton & Spring Grove Ave, Cincinnati 32, Ohio.* Drive for Bush-Lock cable conveyors allows large-radius traction wheels to be applied to straight conveyor runs. Special dogs engage cable and trolley with equal pressure from both sides, equalizing side thrust (May 6, p213).

VIBRATING CONVEYOR — *Carrier Conveyor Corp, 190 N Jackson St, Louisville 2, Ky.* Unit designed for scrap removal under metalworking machines such as lathes, punchpresses, and milling machines, stands only 4½ in. high. It can be fitted with drains for coolant collection and removal (Jun 17, p227).



LIFT PLATFORM—*West Bend Equipment Corp, 550 Water St, West Bend, Wisc.* Unit for handling heavy dies uses an electric winch mounted on roller platform which, in turn, is raised and lowered hydraulically for positioning at press. Built for lifting capacity of 20,000 lb, unit has 2 sets of conveyor roller, 48 in. wide by 96 in. long. Lowered height is 26 in., raised height is 42 in. (Apr 22, p212).

WHEEL BRAKE — *Bassick Co, Bridgeport 2, Conn.* Wing-type wheel brake is now available on 4- and 5-in. casters of Diamond Arrow line. Brake enables caster wheel to be locked with touch of toe (Apr 8, p212).

DOUBLE-ACTING PUMP — *Mechanisms Co, 118 East 2nd St, Uhrichsville, Ohio.* Variable-leverage hand pump, Model 1687, has internal toggle linkage and capacity of 0.475 cu in. per cycle (2 strokes). Designed primarily for cranes, winches, stackers, and other materials handling applications, pump is normally used with 28-in. length of ¾-in. pipe for handle (Jul 1, p144).

LIFT PLATFORM—*Autoquip Corp, 1140 S Washtenaw Ave, Chicago 12, Ill.* Platform of semi-portable Porta-Contact Lift is 6 x 9 ft and supports 5000-lb load. Raised height is 64½ in., lowered 4½ in. Platform is powered by compact pumping unit. Sizes available for loads up to 100,000 lb (Jun 3, p160).

LIFT TABLE—*John Charles Co, 1513 Plaza del Amo, Torrance, Calif.* Easy-Up hydraulic lift table, Model 250, lifts weights in excess of 50 lb to a height of 47 in. Its low position is 30 in. Table top is 22 in. square and is made of cold rolled plate. Unit is actuated by a hand and foot lever; it revolves completely. Price is $99.50 (Aug 26, p164).

PORTABLE COIL RACKS — *Palmer-Shile Co, 16019 Fullerton, Detroit 27, Mich.* Heavy duty racks are built to occupy minimum floor space yet permit more stock tonnage to be stored. Cradle is so arranged that individual coils can be removed from rack without disturbing balance of stock (May 6, p214).

LIFT TABLE — *Southworth Machine Co, Portland, Me.* Strongback has capacity of 4000 lb and lift of 30 in. Platform dimensions are 24 x 53 in., collapsed height is 7¼ in. Table is powered by ½-hp motor; lift is controlled by electro-hydraulic pump. Model has one pair of fixed wheels, pull plate, and detachable dolly or skid spotter (Jan 14, p183).

LIFT TABLE—*Crown Controls Co, Inc, New Bremen, Ohio.* Model 1-157 portable hydraulic lift table is manually operated and is designed for large die handling. Overall lift of the 34 x 31-in. table is 36 in. Unit has two swivel casters at rear and rubber wheels at front for extreme maneuverability even under full load of 1600 lb (Aug 26, p166).

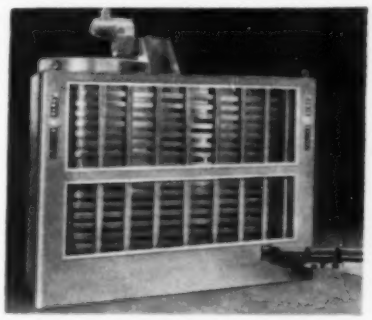
CENTER BOARD PINIONS—*Michigan Tool Co, Gear-O-Mation Div, 7173 E McNichols Rd, Detroit 12, Mich.* Pinions are automatically basketed at rate of 3000 per hr by custom-tailored unit made of standard components. Parts are fed to dropping mechanism, using chain lifts and gravity flow, drop onto upright prongs; release is actuated by automatic indexing of basket. Double or triple dwell is available (Mar 11, p186).

HOIST PANS—*Lord Chemical Corp, York, Penna.* Hoist pans, designed to speed loading of chips and other media, come in four sizes ranging in capacity from 4 to 14 cu ft. Pans are welded from 10-gage steel and are fitted either with rollers or roller-bearing wheels. Pan is placed under gate of storage bin; gate is lifted, admitting chips (Jun 17, p219).

HOPPER—*Roura Iron Works, Inc, 1401 Woodland Ave, Detroit, Mich.* Self-dumping hopper, 30 in. wide, for handling bulk materials, scrap, and waste through narrow aisles and in confined areas, has capacity of 10 cu ft. Mounted on three casters, unit can be pushed manually or transported by fork truck (Jul 1, p158).

ELECTRIC HOIST—*American Chain & Cable Co, Inc, 929 Connecticut Ave, Bridgeport 2, Conn.* Two-speed unit of Frame 1 Wright Speedway line provides fast lifting and lowering speed and a slow work-positioning speed (1800/450 rpm). Unit is available in parallel, cross, hook, rigid or bolt mounting, and features an automatic brake (Apr 8, p184).

MECHANICAL LIFTER-DUMPER — *Essex Conveyors, Inc, 165 Franklin Ave, Nutley 10, NJ.* Cesco Jr handles seventy-five 400-lb loads per hr. Various sizes dump at any height from 2 to 8 ft; can be equipped with changeable skips or one skip (Aug 26, p160).



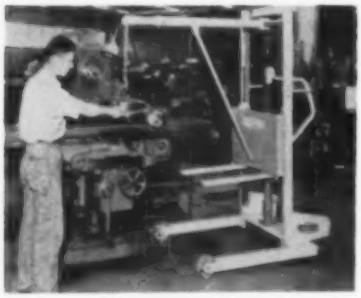
STORAGE UNIT—*Michigan Tool Co, Gear-O-Mation Div, 7173 E McNichols Rd, Detroit 12, Mich.* Storage unit for rolling parts offers a true demand feeding system from mobile storage. Parts are moved through unit by motion imparted from two rubber belts rotating lengthwise within unit. Belt speed is variable. Part enters at lower level; exits at the top (Dec 2, p170).

HAND PALLET TRUCK—*Raymond Corp, 47-150 Madison Ave, Greene, NY.* Truck has been redesigned and features reinforced handle, relocated grease fittings, and stronger axles. Truck has capacity of 1 ton and standard 4-in. lift (Jul 1, p140).

CHIP SEPARATOR—*Ransohoff, Inc, North Fifth St at Ford Blvd, Hamilton, Ohio.* Work and chips are separated with up to 99% efficiency in this unit designed for use with automatic screw machines. An air blast up through a sloping screen separates the materials. Hood design prevents air-blast back pressure and prevents chips from flying out of vibrating loading pan (Jun 17, p196).

PLASTIC PALLETS — *Paltier Corp, 1701 Kentucky St, Michigan City, Ind.* Plastic pallets, skids, trays are designed to meet rugged operating conditions. Units are lightweight—a 40 x 48-in. pallet weighs 23 lb. They will not warp, crack, or sag, and are unaffected by extremes in weather (Sep 23, p208).

STORAGE TRACK—*Cargill Detroit Corp, Birmingham, Mich.* Flipper-type storage track offers guaranteed protection for parts which would be damaged by collision. Being inclined, it allows parts to move by gravity, and can be used for any part that will roll (Oct 7, p176).



CRANE ATTACHMENT—*Oster Mfg Co, E 289 St & Nickel Plate RR, Wickliffe, Ohio.* Crane attachment is now available for company's lifts of 1000 and 2000-lb capacity and 56-in. lift. Boom extension is adjustable for lengths of 30, 36, and 42 in. Unit has lift capacity of 500 lb in the 30-in. position, 420 lb at 36 in., and 375 lb at 42 in. (Oct. 7, p170).

PARTS RACKS—*Lowerator Division, American Machine & Foundry Co, 261 Madison Ave, New York 16, NY.* Self-leveling work racks descend by calibrated spring mechanism as additional weight is added. Top layer of material remains at the same work level (Oct 7, p182).

AUTOMATIC TONGS — *Heppenstall Co, New Brighton, Penna.* Tongs are used to lift die blocks, other square, round, or rectangular objects. One pair, designed for loads to 3000 lb, has max jaw opening of 18½ in.; other, for loads up to 5000 lb, has opening of 25 in. (Feb 11, p178).

BARREL CRADLE TRUCK — *Morse Manufacturing Co, 727 W Manlius St, East Syracuse, NY.* Truck, No. 49, has curved top rails to prevent barrel-tipping, non-skid devices located directly forward of front wheels, and safety catch on nosepiece (Apr 8, p194).

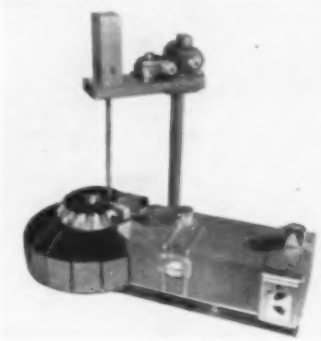
NESTING PAN—*Randolph Industrial Equipment Co, 9550 W Grand Ave, Franklin Park, Ill.* All-steel RAN/tote 802 pan is designed in size multiples to fit all standard shelving, can be used on roller, belt, or conveyor systems (Dec 16, p186).

CHIP CART — *Coolant Equipment Corp, Verona, Wisc.* CeCor Model 43 and 44 carts have permanently mounted side handles which permit three-position rollover dumping of loads weighing up to 500 lb. Model 43 has capacity of 6.9 cu ft, Model 44 holds 8.7 cu ft. Mesh drain racks and drain-out plugs may be specified (Jun 17, p222).

ELEVATING SHOP TRUCK—*Dayton Rogers Mfg Co, 2824 13th Ave S, Minneapolis 7, Minn.* Improved line of extra-heavy-duty units has all-weldment steel frame construction, 2-speed elevating mechanism compensating for both light and heavy load lifting. Steel wheels are rubber-tired, top deck is standard size (Jan 14, p172).

PORTABLE STORAGE RACK — *Bathey Mfg Co, Plymouth, Mich.* Portable small parts bin is available with five sizes of removable bin boxes, 6 in. front to back, 2¾ in. deep and widths from ¾ in. to 11⅛ in. Dimensions of frame are 24 x 36 in. x 62 in. high (Jun 17, p190).

DIE SEPARATOR—*Lexco Engineering & Mfg Corp, Dept DS, PO Box 161, Colmar, Penna.* Demountable die separator is quickly and easily mounted to base of company's lift tables with four bolts. Crossbar of rolled steel tube is equipped with two clamps which are movable on crossbar enabling adjustments to fit any width die set. Clamps can hold 2000 lb (Aug 12, p178).



SORTING MACHINE — *Industrial Gauges Corp, EAM Div, West Englewood, NJ.* Autosorter will sort anything from bearing balls to gears and piston pins into as many as 13 categories. Machine can be used for increments from 0.000010 to 0.010 in. Accuracy between classes is guaranteed as low as 0.000002 in. Speed averages around 10,000 pieces per hr, depending on size and type of piece (May 20, p202).

STORAGE UNIT—*Michigan Tool Co, Gear-O-Mation Div, 17140 E Ten Mile Rd, East Detroit, Mich.* Circular storage unit for no-roll parts handling is designed for automated lines. Unit collects, stores, and feeds parts. Capacity is 600 parts. Parts move spirally from the center outward on the top tier and then are passed to lower level. Parts motion is imparted by the independently rotating tier base (Aug 26, p155).

PORTABLE ELEVATOR — *Barrett-Cravens Co, 628 Dundee Rd, Northbrook, Ill.* Model BH-7.5 battery-operated hydraulic portable elevator has capacity of 750 lb, lift of 71 in., and an over-all height of 83 in. Full lift at capacity load is made in 9.5 sec. Platform is 23¾ in. long by 24 in. wide, and 6 in. above floor in lowered position. Battery charger is built-in (Jul 1, p150).

HEAVY DUTY HOISTS — *R G LeTourneau, Inc, 2399 S MacArthur, Longview, Texas.* Requiring 37% less headroom and having precision load control to within 0.008 in., line of heavy-duty hoists is designed for loads from 3 to 15 tons. Motor and drum are parallel-mounted on same side of gear box, permitting load block to retract between them. Load control is achieved through instant torque of motor and use of two braking systems (Jun 17, p217).

TANK LINERS — *American Agile Corp, Maple Heights, Cleveland, Ohio.* Liners made of ¼-in. polyethylene are designed for steel cylindrical tanks having a flat bottom and no inside metallic welds. These liners permit standard steel tanks to be used for handling corrosive materials. Tanks can be furnished already lined, or liners can be built to specifications and inserted in tanks (Nov 4, p208).

LIFTING DEVICE—*Stilson Tool Corp, 30233 Groesbeck Highway, Roseville, Mich.* New venturi blocks, used in conjunction with company's vacuum cups, facilitate lifting or moving of sheet metal, glass, plastics, and many other types of sheet, molded, or stamped materials. Device is made from aluminum alloy and operates at peak efficiency on 35 to 40 lb air pressure (Sep 9, p200).

BASE-MOUNTED JIB CRANE — *Becker Crane & Conveyor Co, 4900 Ridge Rd, Cleveland 9, Ohio.* Crane features a specially designed, heavy-duty beam support bearing which provides safe load support while requiring a minimum of maintenance. Crane is available in 52 sizes ranging in capacity from 500 to 10,000 lb, with boom lengths from 8 to 20 ft. Full rotation is provided (Sep 23, p194).

DIE HANDLING TABLE—*Hamilton Tool Co, 830 S Ninth St, Hamilton, Ohio.* Big Beulah lifts loads up to 2500 lb; is said to be ideally suited for handling dies. Reinforced top-plate measures 22 x 34 in. and is flitted with eight, recessed, free-rolling conveyor rollers for ease in moving loads. A ram pushes loads from table to press or storage shelf (Dec 30, p140).

MACHINERY ROLLER — *Industrial East Co, Express Roller Div, PO Box 561, Clifton, NJ.* Express Roller has series of moving rollers locked in endless track and extending above and below heavy steel frame. Frame contains serrated edges which grip and carry work being moved. Units range from 2- to 150-ton capacity (Jan 14, p165).

HYDRAULIC LIFT TABLE — *Lexco Engineering & Mfg Corp, PO Box 161, Colmar, Penna.* Lexco 500 hydraulic lift table is 30 in. long, 20 in. wide, and 30 in. high; 18-in. rise brings over-all height to 48 in. Construction is all steel; unit is mounted on two 5-in. rigid casters and two 5-in. swivel casters, and has foot-operated floor lock. Price is $149 fob (Mar 11, p194).

HAND TRUCKS AND DOCKBOARDS—*Voltz Bros, Inc, 2548 Indiana Ave, Chicago 16, Ill.* Aluminum units are designated Met-L-Ite. Trucks are offered in widths from 24 to 40 in. and lengths from 36 to 72 in., with capacities to 2000 lb (Apr 22, p198).

HYDRAULIC CRANE—*Star Machine & Tool Co, 24 S Sixth St, Minneapolis 2, Minn.* Little Oscar Hydro-Lift has a boom which raises 88 in., drops to 28 in., and is 45 in. long. Over-all length of ½-ton-capacity crane is 48 in., width 33 in., height 54 in. Each unit is equipped with 4-ft chain (Jun 3, p166).

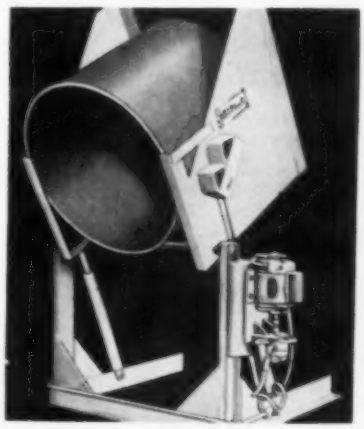
MODULAR BENCHES—*Bathey Mfg Co, Plymouth, Mich.* Module bench and storage system consists of stand and shelf units, three sizes of hopper-front pans, and several models of benchtop bin storage boxes. Workbenches, storage units, and combined work-storage units can be built up from individual sections (Jun 3, p176).

PORTABLE WINCH HOIST—*Aluminum Products, Inc, Fort Lauderdale, Fla.* Unit has 2-ton capacity, weighs 13½ lb, and has safety overload factor of approx 100%. Unit is made of aluminum alloy castings, with stainless steel shafts and springs, and comes equipped with 25 ft of wire rope. Price: approx **$51 (Jun 17, p226).**

PARTS BIN—*Service Parts Systems, Inc, 13380 East Nine Mile Rd, PO Box 243, East Detroit, Mich.* Parts bin, one-piece design, fits wide range of standard and custom racks for use on assembly benches, as bin end units, wall, and mobile floor units. It is available in 6-in.-long by 4-in.-wide by 3-in.-high models, either single or partitioned, and in a size 6 in. long by 8 in. wide by 3 in. high (Dec 16, p190).

SKID LIFTS — *American Pulley Co, 4200 Wissahickon Ave, Philadelphia 29, Penna.* Skid lifts with hydraulic lifting mechanism are available in 18- or 24-in. widths, with platforms from 36 to 72 in. long. Pallet lifts are offered with seven fork lengths between 30 and 66 in.; largest of each type has 6000-lb capacity (Feb 11, p182).

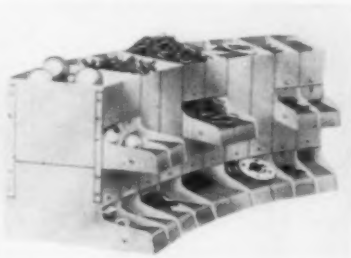
WINCH — *All American Engineering Co, Box 2668, DuPont Airport, Wilmington 5, Del.* 35-lb Model 61 with self-contained motor and lifting capacity of 6000 lb, has reel-in rate of 10 fpm at capacity load. A 400-c ac motor is standard; where necessary, 28-v dc, 110-v ac-dc, or hydraulic drives can be used (Dec 16, p186).



DUMPER—*Uhrden, Inc, PO Box 195, Dennison, Ohio.* Tubar twin-cylinder hydraulic dumper elevates loads to 2000 lb at heights to 60 in. Portable, electric-motor-driven unit uses a 12-v battery or conventional power line (Mar 25, p206).

WEBBING SLINGS — *Caldwell Co, Inc, 1122 Fourth Ave, Rockford, Ill.* Liftex neoprene buffer slings, with nylon-cored buffer strip 1¾ in. wide and ⅛ in. thick, are available in 2, 3½, and 6-in. widths, with safe working loads of 5000 to 13,500 lb. Liftex nylon slings have safe working load of 2800 lb in basket hitch and 1050 lb in choker hitch, and come in 1¾-in. width (Jun 17, p232).

LOAD WHEEL—*Greer Industries Inc, NY International Airport, Jamaica 30, NY.* Disowheel, for material handling equipment, has load-carrying capacity rated up to 2000 lb for a 4 x 3 in. wheel. Available from 3-in. dia to 10 in., and in larger sizes when required (Apr 22, p217).

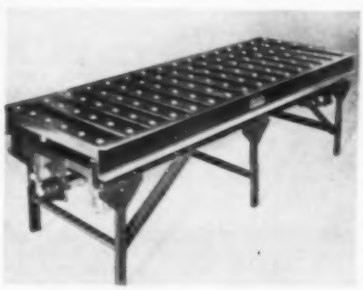


SMALL PARTS BIN—*Speed Assembly Co, Box 344, Fords, NJ.* Speedbin is assembled from 12 standard steel components which can be arranged in limitless number of designs. Each unit can be adjusted in width from 2½ to 15 in. Height is either 4½ or 9 in. Speed nuts are used for assembly (Apr 22, p205).

CHAIN HOIST — *American Chain & Cable Co, Inc, Wright Hoist Div, York, Penna.* Type C Pull-A-Way is available in three capacities: 1½, 3 and 6 tons. Standard lift on all models is 5 ft. Dougie interlock prevents brake from slipping; automatic notch-per-cycle let-down assures positive control; safety handle prevents serious overloading (Apr 8, p210).

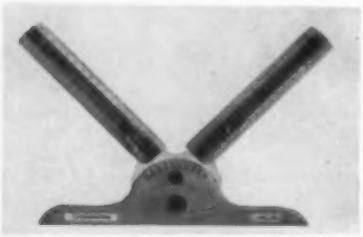
CRANES—*Becker Crane & Conveyor Co, 4900 Ridge Rd, Cleveland 9, Ohio.* Over-riding cranes are available in capacities from 1 to 10 tons and for spans up to 50 ft. Hand-pushed, hand-chain driven, or motor-driven styles can be furnished (Dec 2, p174).

TOTE BOX—*Paige Co, 114 E 32nd St, New York 16, NY.* Box, designated Miracle, automatically pops open for use and pulls flat for storage. Double-walled, corrugated, one-piece box is available in two sizes: large, 17 x 13 x 14½ in. and regular, 15 x 12 x 10 in. (Jul 15, p204).



AIR-LIFT TABLE—*Sage Equipment Co, Inc, 30 Essex St, Buffalo 13, NY.* Unit actuated by 4 air cylinders operating on 100 psi is made in 5- and 10-ft lengths and widths to 48 in. Capacity is from 1000 to 10,000 lb (Apr 22, p192).

BARREL TRUCK—*Palmer-Shile Co, 16019 Fullerton, Detroit 27, Mich.* Barrel truck handles units up to 1000 lb, has two roller-bearing wheels; 22-in. width permits use in narrow aisles. Operator places truck against barrel, drops sliding steel catch down over rim, pulls handles back and barrel is secured for moving (Jun 3, p170).



DRAFTING MACHINE—*Alvin & Co, Windsor, Conn.* Adjustable Scale-Drafter has two beveled flat scales attached to swivel quadrant. Quadrant rotates on base graduated from 0 to 90°. Acrylic plastic device can be ordered with 6- or 12-in. scales in architect's, engineer's or draftsman's models (May 6, p200).

COUNTERBALANCE — *Mayline Co, 619 N Commerce St, Sheboygan, Wisc.* Device designed for use on steeply inclined or vertical drafting boards can be used with any of company's straightedges. Fastening units can be attached to edge of table with screwdriver. Rod is supplied in 44-in. length, and may be cut to length (Jun 17, p198).

WHITEPRINTING MACHINE — *C F Pease Co, 3991 N Rockwell St, Chicago 18, Ill.* Crusader reproduces anything typed, written, drawn, or photographed on reasonably translucent material. Exposure is by 4000-w mercury lamp; development by ammonia vapors. Unit handles materials up to 42 in. in width and practically any length (Jul 29, p164).

TRACING PAPER AND CLOTH — *Charles Bruning Co, Inc, 4700 W Montrose St, Chicago 41, Ill.* Paper and cloth, tradenamed Grid-X, are printed with non-reproducible cross-section guide lines. Paper is available in sheets, pads, and rolls; cloth is available in roll form only. Free samples are offered (Aug 12, p190).

DRAFTING TABLES — *Mayline Co, Inc, Sheboygan, Wis.* Steel 4-post drafting tables are available in variety of combinations, with or without tool drawer, shallow drawer, auxiliary drawer unit, metal plan file, or with drawing top and reference top combination (Apr 8, p204).

DRAFTING TRIANGLES — *Dolgorukov Mfg Co, Fisher Bldg, Detroit 2, Mich.* Plastic drafting triangles, designed Layout, are suitable for use where formerly metal triangles were required. They combine precision with light weight, and are available in sizes up to 24 in. Larger sizes available on request (Nov 4, p204).

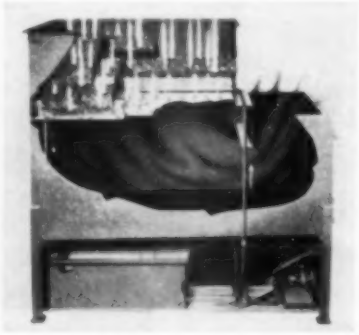
APPLIQUE MATERIAL—*Transparent Products Co, Aplika Dept, 324 E 24th St, New York 10, NY.* Material called Aplika becomes transparent when applied to drawing paper, will take pencil, ink, or printing markings. Furnished in sheet form with special backing in standard sizes of 6 x 9 in. and 8½ x 11 in., sheets are available either plain or printed to any specifications (Dec 2, p178).

BLUEPRINT VIEWER—*Aqua Sportsman, Inc, Dept 23, 2518 Leslie Ave, Cincinnati 12, Ohio.* Roll-O-Print is designed for prints 36 in. wide and up to 40 ft or more in length. Model A can be secured to wall or mounted on any flat surface; Model B clamps on horizontal surfaces. Prints are rolled flat on two rolls and cranked into position. Model A sells for $80; Model B, for $55 (Oct 7, p190).

BEVEL PROTRACTOR — *George Scherr Co, Inc, 200 Lafayette St, New York 12, NY.* Protractor is made of chrome steel, has hardened blade and clear graduations. Any angle can be read to 5' with vernier. Tool is equipped with 6-in. blade; accessories include 8- and 12-in. blades, acute angle attachment, and stand (Feb 11, p193).

BLUEPRINTS RACK—*Momar Industries, 4323 W 32nd St, Chicago 23, Ill.* Glider 700 modular vertical file accommodates 700 plans in sizes up to 24 x 36 in., stands 48 in. from the floor, and has outside dimensions of 24 x 24 in. Price of the all-steel unit with 24-in. plan holders (largest) is $54.50 fob Chicago (Dec 16, p188).

DRAFTSMAN'S PEN—*Clover House, Box 1107, Santa Monica, Calif.* Pen fills itself at the touch of a button. Cartridge, which contains enough ink for 55,000 in. of ruled lines, can be replaced when exhausted. Price $5.95 (Nov 4, p204).



DUST COLLECTOR — *American Air Filter Co, Inc, Louisville 8, Ky.* Cycoil oil bath aftercleaner, Model P-17, is designed to collect dust particles that might escape conventional dry centrifugal or viscous impingement filters. Smallest unit has 2100-3000-cfm rating; largest single unit has rating of 7500-11,000 cfm. Units are just over 7 ft high (Dec 16, p182).

DUST COLLECTOR—*Aget Mfg Co, Adrian, Mich.* Dustkop Model 520-D has identical air handling characteristics as standard model 520 but is 10 in. higher and has a dust storage bin that is over twice as large. Unit is 34 in. high and has 18 x 23-in. base (Nov 4, p204).

DRUM CONNECTIONS — *Torit Mfg Co, Dept KP, 287 Walnut St, St Paul 2, Minn.* Drum connections for Torit 219-FB-55 dust collectors fit any standard 55-gal drum; air-tight seal on drum cover eliminates need for clamps. Drums reportedly can be changed in 30 sec (May 20, p210).

DUST COLLECTOR—*Aget Mfg Co, Adrian, Mich.* 20C30 air-recirculating-type collector has an air capacity of 2405 cfm and dust storage capacity of 6 cu ft. Particles are separated within unit by cyclone separator, and dust is precipitated into bin located in base. Air is exhausted into 3 x 7½-ft bag, which filters out finest dust particles and releases dust-free air into work area (Jul 1, p153).

DUST COLLECTOR—*Craftools Inc, 396 Broadway, New York 13, NY.* Shop-Vac, equipped with a 2½-in.-dia hose, handle and nozzle, is furnished with a 28-gal fiber drum, and also can be used with any standard 24-gal metal disposal can. Unit may also be used with standard 1¼-in.-dia vacuum fittings; it is adaptable for exhausting, blowing, drying and spraying. Price $69.50 (Nov 18, p222).

DUST COLLECTOR — *Aget Mfg Co, Adrian, Mich.* Model 90 NB 50 is designed for operations producing chips, dust or shavings. Roll-away collecting bin has capacity of 37½ cu ft. Air handling capacity is about 10,000 cfm. Dimensions are 48 in. deep, 82 in. wide, 124 in. high, with 15-in. fan inlet dia (Mar 25, p196).

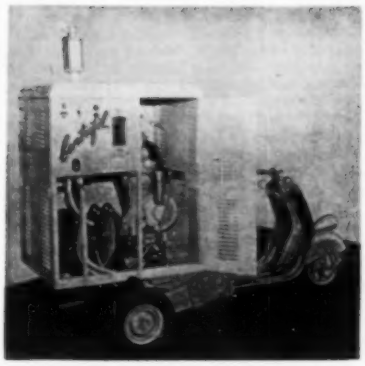
DUST COLLECTOR—*Torit Mfg Co, Dept KP, 287 Walnut St, St Paul 2, Minn.* Model 123 has dust storage capacity of 10 cu ft and filter area of 300 sq ft. 5-hp motor moves approx 2000 cu ft of air per min. Static pressure for inlet is 3½ in. water. Unit can handle as many as 8 grinding wheels at a time. Unit is 115 in. high, 62 in. wide, and 26 in. deep. Price is $1198 fob (Feb 25, p200).

AIR CLEANERS — *Minneapolis-Honeywell Regulator Co, 2753 Fourth Ave S, Minneapolis 8, Minn.* Electronic air cleaners, available in 1300- and 2000-cfm models, use a 13,000-v ionizer section to ionize dirt particles. Positively charged dust particles are attracted to negative (6500-volt) collector plates. Particles can be washed away by water spray. Units are said to operate at 90% efficiency on particles down to size of 0.001 microm, at 333-fpm air velocity (Mar 25, p192).

DUST COLLECTOR—*Joy Mfg Co, Henry W Oliver Bldg, Pittsburgh 22, Penna.* Microdyne dust collector is wet, inertial-type unit 1/10 to 1/20 the size of units with comparable capacity. Test figures show efficiency of over 99% in collecting particles of 5 microns or greater. Units range from 2500-cfm (15-in. dia, 90 in. long, without fan) to 48,000-cfm (53-in. dia, 220¼ in. long, without fan) (Jul 29, p150).

DUST COLLECTORS—*Torit Mfg Co, Dept KP, 287 Walnut St, St Paul 2, Minn.* Series 80, redesigned to increase storage capacity 2½ times, has 150 sq ft of cloth filtering area. Filters can handle from 580 to 1100 cfm at speeds of 5000 to 8000 fpm. Prices from $398 to $448 (Feb 11, p184).

DUST COLLECTOR—*Cincinnati Fan & Ventilator Co, Gomery Rd, Cincinnati 7, Ohio.* Self-contained Dust-Master can be placed at any small grinding, polishing, buffing or blasting machine. Unit has motor-driven centrifugal blower and a large dust filter bag mounted on cast-aluminum cover which fits any 20 or 24-gal waste can. A 4-wheel dolly is also available. Unit, less can, sells for $100 (Jul 1, p146).



FILTER-CENTRIFUGE UNIT — *Permanent Filter Corp, W Washington Blvd, Los Angeles 7, Calif.* Centrifil unit removes practically 100% of all metallic and non-metallic contaminants from fluids in hydraulic systems. Model PSC is mounted on 3-wheel power scooter; PC is 4-wheel mounted with trailer hitch; DC is mounted on dolly wheels (Jul 15, p190).

MOBILE TOOL CABINET—*Simonsen Metal Products Co, 4444 W Chicago Ave, Chicago 51, Ill.* Tool Caddy has 7 drawers and 3 shelf spaces, stands on four legs, and can be tilted back onto two semi-pneumatic wheels for moving about in plant or shop. Unit measures 35¾ in. high x 28 in. wide x 18 in. deep. Tool tray is included with each cabinet (Aug 26, p176).

INDUSTRIAL HOSE REEL—*United Specialties, Inc, Main & Mosby Sts, El Dorado, Ark.* Model A2 has a capacity of 50 ft of ½-in.-ID single hose. Designed for use with compressed air, industrial gases and liquids, unit has universal-type mounting bracket. Clock-type spring provides automatic retraction into metal housing when hose is not in use (Dec 30, p130).

WORK BENCHES—*Sturdi-Bilt Products, Inc, 2501 Peterson Ave, Chicago 45, Ill.* Work bench line has been expanded to include heavy-duty unit benches, heavy-duty pedestal and continuous benches, wall-mounted folding bench and utility table, bench drawers, illuminators and electrical-outlet strips, and tool racks. Benches feature seamless plastic-impregnated solid-wood-core top construction (Oct 7, p192).

MAINTENANCE BENCH — *Wright Tool Co, 4316 N Woodward Ave, Royal Oak, Mich.* Mobile unit is equipped with removable Power-Twin 17½-ton open-throat adjustable press. Bench top is 24 x 36 in. and will support loads up to 2500 lb. Compartment area is 28 in. high, 17 in. wide, and 23 in. deep; right side has tool drawer and three shelves. A 4-in. swivel vise and a 50-ft retractable extension cord are included (Oct 7, p176).

RAMP-DOCKBOARD — *Lite-Line Industries Div, Copperloy Corp, 4111 Brookpark Rd, Cleveland 24, Ohio.* Combination ramp-dockboard, all-magnesium Model RD is built in two detachable sections. Unit is available in capacities up to 12,500-lb axle loading (Apr 8, p204).

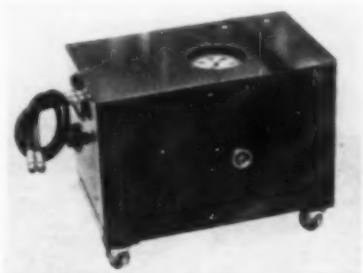
TOOL TRUCK—*Model Box & Tool Co, Yorkville, Ill.* Model 400 is made of heavy-gage welded steel, has two 10 x 2-in. rubber-tired wheels, and full-length rear handle. Unit has seven drawers and one storage compartment. Over-all cabinet size is 12 x 22 x 40 in. (Jun 3, p168).

BENCH LEGS—*Pollard Brothers Mfg Co, 5504 Northwest Highway, Chicago 30, Ill.* One-piece bench legs, available in 18 sizes, can be used for either single-unit or continuous-bench application. Catalog 302 (Oct 7, p188).

STEPLADDER—*Metallic Ladder Mfg Corp, Randolph, NY.* Heavy-duty stepladder is made of aluminum alloy. Front and back steps are staggered to provide safe support for staging between two ladders. Ladder will support 800 lb and is available in 4-ft through 20-ft lengths (Sep 23, p210).

SCAFFOLD—*Up-Right Scaffolds, 1013 Pardee St, Berkeley 10, Calif.* Adjustable platform on wheels, for maintenance jobs, can be assembled rapidly. Jack-knife design with chain-operated screw drive permits raising and lowering platform to any height between 6 and 12 ft above floor (Oct 7, p192).

FLOOR CLEANER ATTACHMENT—*Handling Devices Co, Inc, 43 Pearl St, Brookline 47, Mass.* Magnetic head attaches to any of company's Model E-54M-2 or G-54M-2 Floormobiles. Magnet mounts just behind pickup nozzle and reportedly is capable of lifting 3 or 4 lb of ferrous scrap (Jul 1, p162).



POWER UNIT—*Hi-Shear Rivet Tool Co, 2600 W 247 St, Torrance, Calif.* Air-hydraulic unit features demand system with constant pressures to 3000 psi. Specifications include reservoir capacity of one gal; dimensions of 19½ x 11¾ x 14 in. high; weight of 75 lb. Also available is an electric-hydraulic power unit powered by gear pump (Aug 26, p164).

AIR-TO-HYDRAULIC CONVERTOR —*Renco-Toledo, Inc, 3358 W Alexis Rd, Toledo 13, Ohio.* Automatic air-to-hydraulic convertor is entirely air operated—no electrical connections are necessary. It incorporates company's Renco-Aire micro-valve air motor and a highly efficient hydraulic pump and reservoir. Unit will operate at air pressures as low as 5 psi to a max of 100 psi, providing hydraulic pressures of from 0 to 10,000 psi (Dec 16, p174).

DRILLING MACHINE—*General Electric Co, Schenectady 5, NY.* Kor-It saws holes 1 to 6 in. in dia at rate of 1 in. per min through reinforced concrete. Unit, comparatively noiseless, weighs 150 lbs, uses GE 3450-rpm motor (Mar 11, p180).

SAFETY LADDER — *Tri-Metal Ladder Co, Berwyn, Penna.* Safety-Step ladders have locking feature that raises casters and lowers front legs, locking them securely to the floor to prevent tilting, swaying, and slipping. Other features include expanded metal steps of ½-in. 13 gage or ¾-in. 12 gage, and protective railing at sides and top (Apr 22, p207).

PORTABLE ELECTRIC ELEVATORS—*West Bend Equipment Corp, 335 Water St, West Bend, Wis.* Elevators are available in double and triple-telescoping models lifting as high as 60 ft. Units are designed to facilitate machine assembly and maintenance operations on large presses and other high-level equipment (Aug 26, p164).

FLOOR SWEEPERS — *Magni-Power Co, Wooster, Ohio.* Magnetic hand sweepers called Magni-sweepers can be pushed by hand, towed by vehicle, or mounted on forks of lift trucks. Featuring Alnico V permanent magnets, sweepers come in widths ranging from 18 to 60 in., with sweeping clearances from 1 to 2½ in. (May 20, p226).

PLANT SERVICE EQUIPMENT—lighting, safety

INDUSTRIAL LIGHTING FIXTURES —*Woodward Machine Co, Lighting Div, 4855 Elmhurst, Detroit 4, Mich.* Series B features the Therma-Guard air-cooled reflector assembly which prevents accidental burns to operator. Model B-32 is equipped with 100-w reflector assembly and has a reach of 30 in. It is also available with clamp-type base. This low-priced series of lights is described in company's catalog (Dec 16, p187).

INDUSTRIAL LAMP—*Edmund Scientific Co, Barrington, NJ.* Spot of light can be varied from ⅝-in. dia to 3-in. dia by sliding focusing tube back and forth in lamp housing. Unit can be adjusted to any position for convenient and best illumination. Lamp, with stand, bulb, and daylight filter is priced at $27.50 (Dec 16, p182).

INDUSTRIAL LAMP—*Moffatt Products, Inc, 4824 Triton Drive, Minneapolis 22, Minn.* Multi-Lamp has 360° ball-bearing swivel base, and is available with either 18 or 24-in. arms (Oct 7, p172).

LIGHTING UNITS—*Sun-Lite Mfg Co, 2555 Bellevue Ave, Detroit 7, Mich.* Presslite machine-lighting units, designed to provide glare-free illumination of die-bed area of punchpresses, are furnished completely wired, with all electrical components enclosed within heavy-gage steel housing. Lamps range from 8 to 40 watts; each is rated at approx 15,000 hr under normal conditions (Apr 8, p176).

ALUMINUM SAFETY HAT — *Jackson Products, Air Reduction Sales Co, 31739 Mound Rd, Warren, Mich.* Alumihat is available in one size with headband adjustable to hat sizes up to 7⅝. Six point suspension is buttonholed inside hat shell (Oct 7, p189).

TREADS—*Wooster Products Inc, 100 Spruce St, Wooster, Ohio.* Safestride treads for stair landings and floors are made with heavy-duty aluminum alloy base in widths of 3 and 6 in., length as required. They can be installed with screws or, on masonry, with screws and lead expansion shields (Apr 8, p206.)

FACE SHIELD—*Sellstrom Mfg Co, Palatine, Ill.* Face shield No. 328 is said to be first with glass-fiber spark guard. Material is said to eliminate the moisture- and heat-absorbing characteristics of ordinary face shields. Coverage around face is 19 in., with a choice of either 8- or 10-in. window height (Jun 3, p178).

SAFETY GLASSES — *Chicago Eye Shield Co, 2329 Warren Blvd, Chicago 12, Ill.* Glasses feature modern frame design, are rigid, and will retain their shape without bowing. Glasses are available in two colors, opaque slate or translucent flesh, and three sizes, No. 375, 44 x 37 mm; No. 376, 46 x 39 mm; and No. 377, 48 x 41 mm (Jul 1, p162).

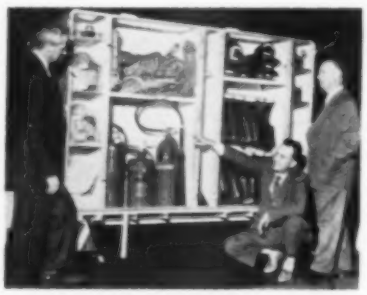
SAFETY GLASSES—*Sellstrom Mfg Co, Palatine, Ill.* 700 Series retain company's square-shape design but have plastic frames. Acetate-butyrate frames give strength and flexibility without weight. Side shielded models are also available (May 20, p217).

SAFETY GLASSES — *General Scientific Equipment Co, 7516 Limekiln Tpke, Philadelphia 50, Penna.* Glasses are available with either clear or green lenses molded of 0.060-in.-thick impact-resistant plastic. Glasses may be worn comfortably over prescription glasses. Each pair is furnished with case. Cost, $6.60 a dozen (May 20, p223).

SAFETY DEVICE — *Humphrey-Wilkinson, Inc, North Haven, Conn.* Heat Warner consists of brass cartridge filled with pungent gas or smoke under pressure. It releases acrid smoke when friction points in machinery develop dangerously high temperatures (Jan 14, p188).

WELDING HELMET ACCESSORY — *Sellstrom Manufacturing Co, Palatine, Ill.* Magna-Weld Plate, designed for use with personal glasses, fits behind the regular helmet filter lens where it is said to provide magnification for near vision throughout entire window area. Device can be used with any standard welding helmet (Jul 29, p158).

FACE SHIELDS—*Jackson Products, Air Reduction Sales Co, Warren, Mich.* Musketeer line is available with four types of face shield visors. Shields available are: fiber visor with welding lens, metal-bound plastic visor in various depths, wider all-plastic visor, and a 24-mesh wire screen visor (May 20, p216).



INDUSTRIAL EMERGENCY UNIT—*Dana Corp, Parish Pressed Steel Div, Reading, Penna.* Plant disaster and civil defense unit is easily pushed by hand or moved by fork truck. Compartments hold rubber coats, asbestos suits and blanket, helmets, hip boots, six fire extinguishers, first-aid kit, gas masks, rubber gloves, hoses, ladder, lights, and wrecking bars (Feb 11, p193).

GOGGLES—*Chicago Eye Shield Co, 2329 Warren Blvd, Chicago 12, Ill.* Plastic goggles, Cesco 565, are molded from soft vinyl material, contoured to fit snugly, and fit over most eyeglasses. Wide curved lenses offer full vision; perforations give adequate ventilation; choice of clear or green plastic lenses (May 20, p225).

FACE SHIELD—*Chicago Eye Shield Co, 2329 Warren Blvd, Chicago 12, Ill.* Cesco 439-FT is made of translucent glass fiber material, employs the new Cesco G1-R headgear for quick fitting, is easily tilted up off the face (Nov 18, p220).

EYESHIELD—*US Safety Service Co, 1535 Walnut St, Kansas City 8, Mo.* All-plastic eyeshield, weighing less than an ounce, is available in large and small sizes, with or without folding side shields. Lens color is either clear or green (Dec 2, p176).

GLOVES—*Wearhide Glove Co, Rockford, Mich.* Boarhide industrial gloves with seamless palm and full leather wing thumb are available in three basic styles: safety cuff, gauntlet, and knitwrist (Apr 8, p206).

FACE SHIELD WINDOWS—*American Optical Co, Safety Products Div, Southbridge, Mass.* Windows for company's H series shields are available with evaporated aluminized coating. Also available is aluminized plastic cover plate for welding helmets. Both reflect more than 70% of radiant heat normally reaching worker's face (Sep 23, p206).

FACE SHIELDS — *Pulmosan Safety Equipment Corp, 644 Pacific St, Brooklyn 17, NY.* Basic series, PS 100, has soft plastic headframe and molded plastic spark deflector; PS 500 Series has a replaceable elastic headband instead of standard adjustable slide; PS 600 Series is same as PS 500 but without spark deflector (Jun 3, p178).

PORTABLE EYEWASH FOUNTAIN—*Haws Drinking Faucet Co, Fourth and Page Sts, Berkeley 10, Calif.* Model 8950 has specially designed fountain heads that project water into eyes with a soft flushing stream. Unit is designed for areas where normal water supply is lacking. Pressure is built up within tank by means of large pump handle. Capacity is 3 gal (Aug 26, p178).

GLOVES—*Jomac Inc, 6128 N Woodstock St, Philadelphia 38, Penna.* North PVC-coated industrial gloves, said to be extremely abrasion and chemical resistant, and highly flexible, reportedly will not crack or peel, are non-flammable and non-oxidizing. Furnished in a wide variety of styles in full range of sizes (Dec 16, p190).

SAFETY GLASSES—*U S Safety Service Co, 1215 McGee St, Kansas City 6, Mo.* Type S-7 glasses have square-shaped safety frames and can be fitted with Optilite (plastic) or hardened-glass lenses. Standard shades of green and rose lenses are also available. Frames come in two colors: bronze or crystal pink (May 20, p210).

GOGGLES—*Watchemoket Optical Co, Inc, 232 W Exchange St, Providence 3, RI.* Model 440M have wide-angle lens which fits over most prescription glasses. Shatter-proof lens is available in either methacrylate for heavy-impact protection or acetate for normal usage. Goggles are lightweight, fully ventilated, and smaller than other goggles of this type (Jul 1, p160).

SAFETY HAT — *Boyer-Campbell Co, Safety Div, 6540 St Antoine, Detroit 2, Mich.* Superlite is made of aluminum alloy, ribbed for max resistance to blows, and is completely adjustable for size 6⅝ to 8 (Jun 7, p217).

LENS CLEANING STATION — *US Safety Service Co, 1215 McGee St, Kansas City, Mo.* Unit, No. 21961, consists of wall-mountable tissue dispenser and an 8-oz spray-top bottle of anti-fogging lens-cleaning fluid. Unit is shipped with two boxes of tissues (Apr 8, p204).

TUBE CLEANING DRILL—*Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Carbide-tipped tube cleaning drill is available designed for efficient removal of both hard scale and soft coagulated deposits from inside walls of condenser tubes. Data on applications and standard sizes can be obtained from manufacturer (Dec 16, p188).

ELECTRIC BALANCE REEL — *Vacuum Cleaner Corp of America, Cordomatic Div, 1724 W Indiana Ave, Philadelphia 32, Penna.* Unit eliminates separate wire cable usually needed to suspend tools. Model 700-BR-LA has extension of 10 ft; Model 700-BR has grounding-type twist-lock connector; non-electric model, 700-CR, has 6-ft extension (Jul 1, p154).

UTILITY SHELF—*E V Nielsen, Inc, Stamford, Conn.* Piv-O-Tray attaches to drillpress columns, machine bases, lathes, and other machines. Tray, which can be positioned at touch of a finger, is 10 x 10 in. and will support more than 50 lb. Unit is made of 16-gage steel (Aug 12, p168).

STICK-ON TABS—*W H Brady Co, 727 W Glendale Ave, Milwaukee 9, Wis.* Self-sticking numbers and letters, mounted on dispenser cards, are available in six sizes from ½ to 5 in. high. Plastic-impregnated cotton-cloth tape withstands temperatures from +300 to −300 F (Apr 8, p201).

MOUNTING PAD — *Clark-Cutler-McDermott Co, Franklin, Mass.* Air-Loc is designed for use with punchpresses, electric motors, pumps, and machine tools. Made of Goodrich Geon polyvinyl resin, sisal and cork, pad is reported to recover 99% of original thickness, even after repeated loadings to 1000 psi (Jun 3, p174).

HANDWHEELS—*Jergens Tool Specialty Co, 712 E 163 St, Cleveland 10, Ohio.* Cast-aluminum wheels of solid-disk type have been added to company's line. New models, 4 or 5-in. dia, are available plain or finished (finished OD, faced bosses, spot-centered), with or without lug for revolving handle (Apr 22, p214).

CLEANER—*DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* Machinery cleaner and flushing agent, Kleen-Flush, is non-toxic and non-irritating, and comes in plastic bottles. One 4-oz bottle, diluted with water, makes 5 gal of cleaner which removes grease, oil, and scum from coolant systems and machine surfaces (May 20, p225).

HAND CLEANER—*Magnus Chemical Co, South Ave, Garwood, NJ.* Magnus Liqui-Lave is unaffected by hard water; lathers and rinses quickly, leaving no unpleasant odor. Product is usable in dispensers (Dec 2, p176).

PAINT GUN—*Napco, Inc, 3471 Fairmount Blvd, Cleveland 18, Ohio.* Rogers Rotary Magic Painter is powered by self-contained motor that spins rotor blades at speeds up to 22,000 rpm. It is manufactured by Martin Stove and Range Co., and is used for room painting, stencilling, or for applying fine oil spray to finished machine parts. Spread is controlled by gate-like opening (Feb 25, p219).

MACHINE COVERS — *Size Control Co, Div of American Gage and Machine Co, 2500 W Washington Blvd, Chicago 12, Ill.* Plastic covers are available for company's centerless lapping machines. Made of polystyrene and finished with steel band, hoods protect machines against dust and dirt, and against accidental dropping of hand tools (Sep 23, p206).

ROD WIPER — *Master Pneumatic, Inc, Equi-Flex Products Div, 20450 Sherwood 34, Detroit, Mich.* 360° non-clogging metallic device strips foreign matter from reciprocating mechanisms. Available in range of sizes (Feb 11, p174).

SLIDE RULE—*Pickett & Eckel Co, 1109 S Fremont Ave, Alhambra, Calif.* Decimal Keeper slide rule has, in addition to conventional scales, special scales that provide individual positions for each number from 10^{-10} through 1 to 10^{+10}. Problem is worked on special scales, giving answers to between one and two significant figures with decimal point in place. Device is licensed by L J Kamm and marketed as Model 904 (Nov 4, p208).

SERVICE TOOL SET—*Kent-Moore Org, Inc, 1501 S Jackson St, Jackson, Mich.* Designed for servicing of Roots-type blowers in Detroit Diesel engines, set made up of nine components provides for correct replacement of gears, plates, bearings, seals, and other parts, while minimizing risk of damage to machined surfaces (Apr 22, p217).

THERMOSTATICALLY CONTROLLED VALVE—*Heat-Timer Corp, 657 Broadway, New York 12, NY.* Zonvalve permits temperature control of individual plant areas. Unit can be attached to radiator in place of ordinary radiator valve, or at any point on supply piping. It is powered by an electric motor and, when in open position, automatically actuates the burner or circulation (Dec 2, p170).

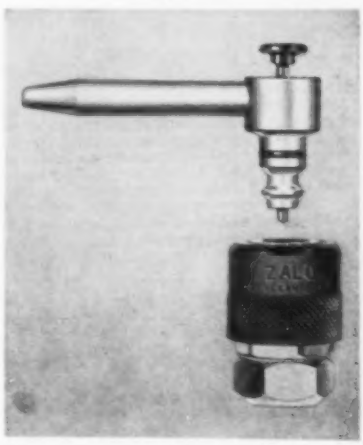
CALCULATOR—*Sheridan Advertising Specialities, 26032 Grand River, Detroit 19, Mich.* "Fraction of an Inch Adding Machine," permits continuous adding or subtracting of fractions, decimal equivalents, or mixed fractions and decimal equivalents. Device has one moving part; is made from aluminum. Price ranges from $2.75 in lots of 25 to $2 in lots of 1000 (Feb 25, p220).

MAGNETIC TOOL RACK — *Magnetrode Corp, 1615 Main St, Kansas City 8, Mo.* Magna-Bar features lifetime magnets, holds tools securely, and is easily attached to wall or shelf. 24-in. craftsman size, complete with mounting brackets, costs $9.95 (Mar 11, p206).

NOZZLE HOLDER—*Dilley Mfg Co, 1655 Doan Ave, Cleveland, Ohio.* Air-hose nozzle holder, called Dilley Magnetic, consists of pliable rubber nozzle fastened to Alnico magnets. Slight, one-finger pressure starts flow of air through nozzle; air is shut off as pressure is released. Device attaches to machine tools at point of use (Sep 23, p210).

CHART—*Carpenter Steel Co, West Bern St, Reading, Penna.* Slide chart on machining stainless steels gives data on variety of operations. Tabulates speeds and feeds; gives special notes on drilling, tapping, lubrication, and welding; shows relative workability (Jul 15, p184).

ABRASIVE BELT CLEANER — *Imported by Henley & Co, Inc, 27 Spruce St, New York 38, NY.* Hapomit is a rotating steel-wire brush that removes clogging material as hand brake is gradually applied. A Western European product, brush sells for about $13 and is said to increase useful life of belt by 30% (May 20, p208).



AIR GUN — *Zalo Mfg Co, 4895 Van Epps Rd, Cleveland 9, Ohio.* Lightweight air gun, made of machined steel parts, has no springs, valves, or rubber seals. It is available in two models, Series 254 and 255, to fit many existing air line connections. Gun fits Zalo 250, 255 and PT couplers (Oct 21, p220).

VIBRATION ISOLATOR — *Ucinite Co, Division of United-Carr Fastener Corp, Newtonville 60, Mass.* Equiflex, 125500 Series, is high-damped, diagonal-spring, all-metal unit said to withstand repeated 15g shocks without loss of efficiency. 30g ultimate. Available in No. 1 size plate type in ¼, ½, 1, 2, or 3-lb load rating (Feb 11, p168).

REPAIR KIT—*Devcon Corp, 1220 Endicott St, Danvers, Mass.* Kit contains Plastic Steel for on-the-spot repairs of tanks, pumps, and other machinery. Material, combination of 80% steel and 20% plastic, is used like modeling clay. Two hours after addition of special hardening agent material becomes strong, tough, rigid metallic piece (Aug 26, p178).

HEX KEY HOLDER—*Hunter Tool, Box 564, Whittier, Calif.* Handy Holder is made of tough plastic material and has slightly undersize holes that hold wrenches snugly in place. Two models are available: one holds seven keys—sizes from 5/64 through ¼ in.; other holds ten wrenches, from 0.050 through 5/16 in. (May 20, p226).

PEDESTAL-BASE CABINET—*Logan Engineering Co, 4901 W Lawrence Ave, Chicago 30, Ill.* Logan 12, 11 and 10-in.-swing lathe cabinets are available in two styles; one, with door covering three storage compartments or shelves inside right pedestal; other with three drawers with individual locks. Both have chip pan (Jan 14, p192).

MACHINERY MOUNT—*Felters Co, Unisorb Div, 210 South St, Boston 11, Mass.* Level-Rite consists of all-steel base with leveling screw and plate, combined with Unisorb vibration-damping pad. Available in seven models with loading ranges from 800 to 7500 lb per unit, mount comes in four sizes: 4 x 4, 6 x 8, 8 x 8, and 10 x 10 in. (May 20, p224).

SPEED SELECTOR CHART — *Simonds Worden White Co, 1101 Negley Pl, Dayton 7, Ohio.* Chart provides quick determination of grinding wheel speed. This free slide-chart determines wheel rpm, and recommended speeds for standard wheels (Nov 18, p214).

VIBRATION PAD—*Bullard Clark Co, E H Jacobs Northern Div, Danielson, Conn.* Tiger Paw is molded from reinforced glass fiber and vinyl resin, and withstands oil, soap, water, fungus, and chemicals. Suction cups molded into both surfaces of pad hold machinery to floor without use of adhesives. Material is available in 22 x 22-in. sheets or cut to size (Jul 1, p134).

AIR NOZZLE — *Mortimore Manufacturing Co, 72 Broadmere Rd, Stratford, Conn.* Aluminum air nozzle allows full control of airflow by operator, weighs less than 6 oz. Thumb pressure releases air from slight puff to full blast with no jumping (Dec 2, p176).

CLEANER — *American Optical Co, Safety Products Div, Southbridge, Mass.* Detergent for cleaning and sterilizing personal equipment such as respirators, face shields, and helmets is available in powdered form in cartons of 25 one-ounce packages, each to be diluted with a gallon of water (Dec 2, p178).

GRINDING GUIDE — *Abrasive Machine Tool Co, Dexter Rd, East Providence, RI.* Grinding calculator is pocket-size guide for selecting proper abrasive wheel for grinding 17 commonly used metals. Selector indicates type of abrasive, grit size, grade and bond for both straight and cup wheels. Device is 4¾ in. in dia and sells for $1 (Jul 29, p164).

PORTABLE STORAGE CABINET — *Arcline Products Co, 1415 W Shakespeare Ave, Chicago 14, Ill.* Cabinet contains 13 varied-size compartments; louver operation opens all trays at one time. Unit can be placed on workbench or hung from wall. Over-all size is 12 x 13½ x 6 in. (Oct 21, p224).

MAINTENANCE CHEST — *Waterloo Valve Spring Compressor Co, 300 Ansborough Ave, Waterloo, Iowa.* Steel chest for large bulky tools is 40 in. long, 16 in. wide, and 12 in. high. It is equipped with a tote tray 23½ in. long, 8¾ in. wide and 2¼ in. deep. Unit can be used as a rolling tool box by addition of 5-in. heavy-duty casters (Oct 7, p188).

VIBRATION PAD—*Korfund Co, Inc, 48-39B 32nd Place, Long Island City 1, NY.* Waffle-Grip Elasto-Rib consists of layer of resilient cork permanently bonded between two layers of oil-resistant neoprene which have been embossed with waffle-type pattern. It is made in two types: standard capacity for loads to 60 psi, and high capacity for loads to 120 psi (Jun 17, p232).

DYNAMIC BALANCING INDICATORS—*W H Brady Co, 727 W Glendale Ave, Milwaukee 9, Wis.* Indicators printed on self-sticking tape, are used on parts balanced with Gisholt dynamic balancers. Tapes are made to precision lengths with exact distance measured between numerals to insure accurate stroboscopic reading of workpiece (Jul 1, p158).

SELF-STICKING LABELS — *W H Brady Co, 727 W Glendale Ave, Milwaukee 9, Wis.* Write-On labels take pen, pencil, ballpoint, or typewritten information, and will stick to any clean dry surface. Labels are available in vinyl cloth or aluminum foil, in sizes from ¼ x 1½ in. to 1½ x 1½ in. (Jul 1, p162).

CONVERSION CHART — *Torsion Balance Co, Clifton, NJ.* Chart contains conversion data for Rockwell and other hardness tests. Free desk-size chart also has tables for cylindrical corrections (Jul 29, p156).

REMOVABLE FUNNELS — *Rampe Mfg Co, 14916 Woodworth Ave, Cleveland 10, Ohio.* Funnels which fit company's tumbling barrels are designed to speed loading, minimize spilling of materials. They are made for barrels with capacities from 1 gal to 8 cu ft. One side of spout is vertical to permit use of two funnels side by side (Feb 11, p176).

PROTECTIVE PAPER — *Behr-Manning Co, Troy, NY.* Protective paper No. 190 is designed to guard highly finished surfaces against marring in fabrication, shipment, or storage. It is self-adhering and comes off cleanly. Paper is 6.5 mils thick, comes in 100-yd rolls, and is available in widths of 12, 24, 30, 36, 36½, 48, and 48½ in. (Sep 9, p208).

CABINETS—*Penco Metal Products Division, Alan Wood Steel Co, 200 Brower Ave, Oaks, Penna.* Steel cabinet line includes counter-weight utility, and toolroom units featuring 3-point security latching, chrome door handles, and adjustable shelves; standard colors are gray and green (Dec 16, p187).

LABELS—*Western Lithograph Co, Westline Products Div, 600 E 2nd St, Los Angeles 54, Calif.* Self-adhering numbers, letters, and signs for industrial marking applications are available in many color combinations. They are offered in cloth, vinyl, or any self-adhering material specified. Catalog and samples available (Sep 23, p207).

BLOWGUN—*E V Nielsen, Inc, Stamford, Conn.* Safe-T-Air is designed for clearing work surfaces and parts of waste cuttings, dust, and particles. Complete protection against flyback is afforded because 40% of the air intake forms a protective screen whenever trigger is depressed (Oct 7, p194).

VIBRATION MOUNTING—*Vibration Mountings, Inc, 98-17 50th Ave, Corona 68, LI, NY.* Shear-Flex comes as 18-in.-square x ⅝-in.-thick oil resistant neoprene sheet with a cross-ribbed structure that offers excellent deflection throughout the full load range of 5 to 70 psi. Alternate ribs are slightly higher to provide skid-proof surface. Material can be cut to size and can be used in multiple layers (Oct 7, p192).

CONVERSION CHART—*Opto-Metric Tools, Inc, 137 Varick St, New York 13, NY.* Chart permits conversion of fractional inches into decimals and millimeter equivalent. Free chart also shows conversion of decimal millimeters into inch decimals (Mar 11, p182).

PLASTIC COATED DRUMS — *Michigan Chrome & Chemical Co, Coating Div, 275 Iron St, Detroit 14, Mich.* Drums and buckets coated inside and out with Microsol vinyl plastisol, are designed for storing acids, caustics, plating solutions, and all types of corrosives. Drums are furnished in 55 and 30-gal sizes with or without welded handles; buckets are available in 5-gal sizes (Nov 18, p222).

WORK GLOVE—*Riegel Textile Corp, Industrial Glove Div, Conover, NC.* Mighty-Grip has pebble-grained plastic outer surface said to provide excellent gripping power. Fabric is light and flexible and allows hand to "breathe." Gloves are said to offer price savings of 17 to 41 cents per pair over comparable gloves (Dec 2, p170).

BLOWGUN — *Toolcraft Products Co, PO Box 92, South Pasadena, Calif.* Flexible-tip air blowgun, known as Air-Lok, uses finger pressure to control air volume. Device has non-removable tip with standard orifice, flexible neoprene body, ¼ or ½-in. fittings and an internal air shutoff valve which is fully operable on as little as 20-lb line pressure (Dec 2, p176).

FOOT-PEDAL GUARD—*Versa Products Co, Inc, 249 Scholes St, Brooklyn 6, NY.* Foot Guard, for use with all Versa pedal-actuated control valves, prevents accidental tripping and protects operator and actuating device. It can be used bolted down or unbolted. Bulletin 657 available (Sep 23, p207).

CLEANING AND POLISHING CLOTHS — *Edmund Scientific Co, Barrington, NJ.* Cloths made of nonwoven rayon and treated with silicone are said to impart a protective, odorless, non-oily coating to highly finished glass, plastic and metals. Cloths are 18 x 16 in., and sell for $26.50 per 100-cloth package (Oct 7, p189).

CHUCK KEYS — *Lindstrom Mfg Co, Inc, 173 Water St, New York 38, NY.* Safety chuck keys and lathe wrenches feature built-in spring which automatically ejects key or wrench from chuck. They are designed to fit all Jacobs and Supreme key-operated chucks, are made from cold rolled steel, and are heat treated and plated to resist corrosion (Jun 3, p171).

JAW PULLER—*Owatonna Tool Co, 383 Cedar St, Owatonna, Minn.* Grip-O-Matic jaw puller offers a choice of either two or three points for gripping. Unit can be changed from 2-jaw puller to a 3-jaw model by shifting one jaw and adding another. Puller has power-pitch thread which increases power 32%. Units are available in sizes from 6 to 14-ton capacity (Nov 4, p196).

SCALES—*Douglas Homs Co, 326 Jackson St, San Francisco 11, Calif.* Beam bench scales are offered in three models with capacities of 52, 105 and 300 lb. All models are portable; locking device permits use of beam as carrying handle (Feb 11, p174).

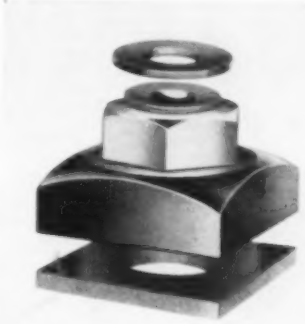
MODULAR CABINETS—*Elgin Metalformers Corp, 630 Congdon Ave, Elgin, Ill.* Modular enclosure system offers variety of cabinets which can be constructed from 75 standard building-block components and 125 sub-parts. Units are factory sub-assembled; purchaser merely bolts units together. Forty different panels and 4 different-size drawers, ranging from 7 to 14 in. high and 16 in. deep, form cabinets up to 81 in. high (May 6, p192).

OIL—*W J Ruscoe Co, 483 Kenmore Blvd, Akron 1, Ohio.* Penetrating oil, tradenamed Dependable, contains MoS_2 and company's additive DPX-16. It comes in a 16-oz aerosol dispenser and sells for $1.98 (Oct 7, p192).

MARKING PEN—*Organic Products Co, PO Box 428, Irving, Texas.* Mark-All is a heavy-wall polyethylene squeeze tube with a felt writing point and filled with an ink that writes on almost all surfaces—both porous and non-porous. Ink comes in black or white and several colors. It resists abrasion, water, gasoline, and many solvents; it resists heat to 400 F (Nov 18, p219).

DRILL CHART—*Chicago-Latrobe, 411 W Ontario St, Chicago 10, Ill.* Folder listing Super Cobalt drills is offered free. It lists complete line of tools, in fractional, wire-gage, and letter sizes, including straight and taper shank models. Bonding bits are also listed (Mar 25, p227).

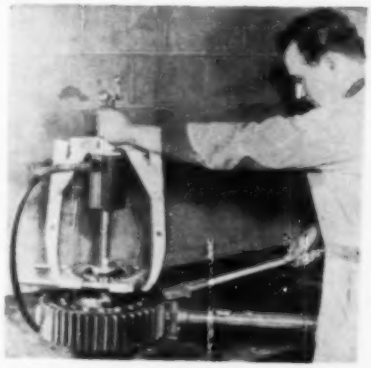
MASKING TAPE—*Minnesota Mining and Mfg Co, 900 Bush St, St Paul 6, Minn.* Scotch No. 214 (Type 2MNB) tape is designed for use in temperatures up to 300F for bakes up to 8 hr in duration. It will withstand 400F for shorter cycles. Tape has crepe-paper backing and pressure-sensitive adhesive. It is available in standard roll lengths of 60 yd and in any width (Jul 1, p146).



LEVELING JACK — *Enterprise Machine Parts Corp, 2731 Jerome Ave, Detroit 12, Mich.* Style JS supports 20 tons and is raised and lowered by adjustable nut. Concave spherical radius in lift screw and aligning disk compensate for floor slope. Device is available in 12 models ranging in height from 1¾ to 3¾ in. with leveling adjustment of ⅜ in. (Jun 17, p204).

CONVERSION CHART — *Precision Equipment Co, 3716 N Milwaukee Ave, Chicago 41, Ill.* Conversion factors wall chart includes such data as inches to centimeters, watts to hp, cubic feet to liters, microns to meters (May 20, p212).

LENS CLEANING TISSUES — *Carhoff Co, 11706 Kinsman Rd, Cleveland 20, Ohio.* Tissues will clean and fog proof lenses in one operation with plain water. Lenses are wetted and wiped with No-Fog tissues. Available in plain boxes or light and heavy-duty stations for plant use (May 20, p230).



HYDRAULIC RAMS AND PULLERS —*Blackhawk Mfg Co, 5325 W Rogers St, Milwaukee 46, Wis.* Holl-O-Ram line consists of three hollow ram models with 20, 30, and 60-ton capacities; a complete set of seven pulling attachments for every shaft pulling operation; three converter sets for conversion of other mechanical and shop-made pullers to Holl-O-Ram use (Jul 29, p154).

BIT HOLDER — *Donart Co, 3921 Xerxes S, Minneapolis 10, Minn.* Bit-Caddy attaches to cord of electric drill and holds set of 13 bits, 1/16 through ¼ in. Outer sleeve slips on cord; center section is split lengthwise for easy installation. Price $1.98 (Apr 22, p220).

IDENTIFICATION NAMEPLATES — *ECP Corp, 6808 Wade Park Ave, Cleveland 3, Ohio.* Nameplates for control panel elements, motors and other equipment are available in fiber or aluminum. Special adhesive on back of ⅝ x 1-in. plates forms strong, permanent, heat-resisting bond. Standard JIC markings or special markings (May 20, p220).

KEYCHAIN—*Hard Inc, 3500 Pontiac Rd, Ann Arbor, Mich.* Flexkees is a ringchain combination for keeping complete set of setscrew keys together. Each key is fastened to its chain by sliding ring which allows key to be rotated without winding chain around it. Assortment includes 9 keys, 0.050 to ¼ in. inclusive. Price, $1.45 (Jun 3, p171).

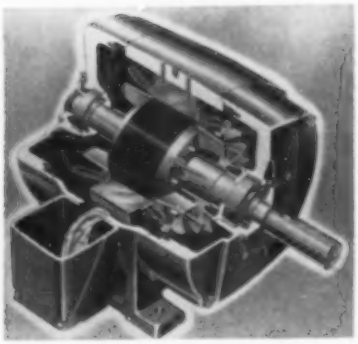
SCAFFOLD CASTERS — *Faultless Caster Corp, Evansville, Ind.* Series C900 swivel stem and CP900 swivel plate casters incorporate double-acting locks that secure mobile equipment until levers are released (Dec 2, p174).

American Machinist

1958

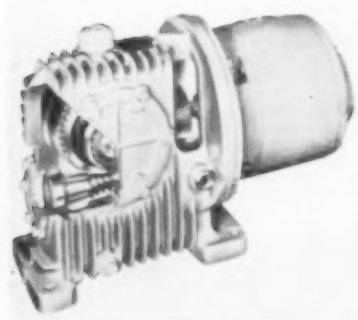
PRODUCTION PREVIEW

PARTS AND MATERIALS



40 TO 125-HP MOTORS — *General Electric Co, Schenectady 5, NY.* Tri-Clad 55 line of induction motors, from 40 to 125 hp, has been redesigned to conform to new NEMA standards. Weight savings average 20%; space savings, 27%. Motors are designed for quieter operation and reduced maintenance (Jun 3, p150).

GEAR MOTOR—*Jordan Co, Inc, 3235 West Hampton Ave, Milwaukee 9, Wisc.* Shaftrol mounts on shafts from ¼ to ⅞ in. in dia which normally carry crank, lever, knob or handwheel. It is equipped with torque arm or plate with resilient mounting that absorbs any runout present in shaft. Speeds from ½ rpm to several hundred rpm, and torques from a few in.-oz. to several hundred in.-lb are available (Feb 11, p188).



GEARMOTORS — *Michigan Tool Co, Cone-Drive Gears Division, 7171 E McNichols Rd, Detroit 12, Mich.* Line of right-angle worm gearmotors is furnished in both standard extended-shaft and shaft-mounted models. Standard NEMA D-flange motors are used. Four different sizes are available to handle fractional to 15-hp motors. Units are furnished in 28 standard output speeds from 6.25 to 525 rpm (May 6, p186).

MOTOR—*General Electric Co, Schenectady 5, NY.* Small but powerful 2.2-hp dc motor is designed for automatic machine tools and other automated applications requiring ability to handle frequent starts, stops, reversals, and widely fluctuating loads. Blower-cooled, 200-v motor gains up to 63% of rated speed of 5500 rpm in 0.014 sec from standstill (Sep 9, p202).

AC MOTORS—*Westinghouse Electric Corp, PO Box 2099, Pittsburgh 30, Penna.* Line designated Life-Line A has been extended to include ratings from 40 to 125 hp. Frame sizes include all NEMA designations from 364U to 445US, conforming to new NEMA standard dimensions (Sep 9, p224).

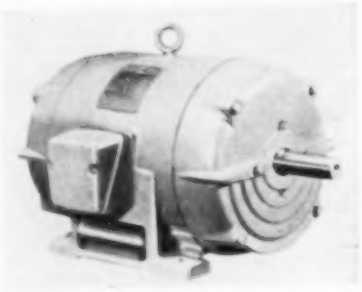
AC MOTOR—*Reliance Electric & Engineering Co, 1088 Ivanhoe Rd, Cleveland 10, Ohio.* Totally enclosed air-over ac motor produces varying hp according to velocity of cooling air flowing over motor frame. Cooling effect allows increased power output without exceeding rated temperature rise. Available in new NEMA frame sizes from ½ to 30 hp, motors operate on 208-v network systems (Apr 8, p190).

GEAR MOTOR — *Rockwood Pulley Mfg Co, Inc, 20 Crosby St, New York 13, NY.* Ritespeed is available from stock in all speeds and from ½ to 15 hp. Feature of motor is simplicity with which cartridge assembly and electric motor can be removed from gearcase without touching base of unit. All integral sizes have TEFC motors, NEMA standard D flange (May 6, p208).

GEAR MOTORS — *Sterling Electric Motors, Inc. 540 Telegraph Rd, Los Angeles 22, Calif.* Shaft-mounted, right-angle gear motors are available from ¼ through 5 hp. Aluminum construction makes them especially suitable for lighter pieces of machinery, or use in small areas (Dec 16, p187).

MOTOR—*US Electrical Motors Inc, Box 2058 Terminal Annex, Los Angeles 54, Calif.* Uniclosed footless motor, designed for direct connection to driven equipment is supplied with NEMA style C Unimount bracket for automatic alignment. Built to latest NEMA specifications, it is furnished in ratings from 1 to 30 hp (Dec 16, p188).

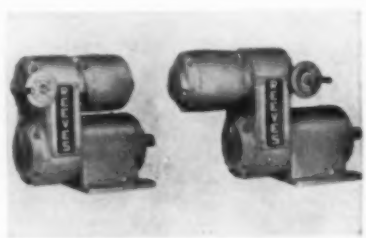
FRACTIONAL-HP MOTORS — *Robbins & Myers, Inc, Motor Division, Springfield, Ohio.* New Model R is available in new NEMA ratings from ⅛ to 1 hp in polyphase, capacitor single phase, permanent split capacitor, and (in the smaller ranges) split phase types. Units are available with either sleeve or fully sealed ball bearings (Oct 7, p176).



MOTOR—*Louis Allis Co, Dept P, 427 E Stewart St, Milwaukee 1, Wis.* Syncro-Spede is reported to be industry's first synchronous induction motor built in the same NEMA frame size as a standard motor of equal horsepower. It accelerates as an induction motor but runs at exact synchronous speed without permanent magnets or dc excitation. It is available in ratings from 1 to 100 hp (Dec 16, p180).

GEARMOTORS—*Century Electric Co, 1806 Pine St, St Louis 3, Mo.* Gearmotors are available with polyphase, single phase, and dc motors; single, double, and triple reduction with output speeds from 750 to 7.5 rpm; double and triple reduction units from 350 to 7.5 rpm (Sep 23, p210).

GEARMOTORS — *Brown-Brockmeyer Co, Dayton, Ohio.* Fractional-hp gearmotors with high starting torque have shaft-output speed of 144 rpm and can be made instantly reversible. Gearmotors can be equipped with magnetic-disk brake for instant stopping and with friction clutch as safety factor. For automatic operation applications, they are equipped with limit switches (May 20, p212).



VARIABLE-SPEED DRIVES — *Reliance Electric and Eng'g Co, Reeves Pulley Co Div, 1225 Seventh St, Columbus, Ind.* Vari-Speed Motordrives are available in the 200 and 300 sizes designed for applications ranging from 1 through 5 hp. They are available in two styles—C flow and Z flow. In each style, there are several different models (Sep 9, p187).

VARIABLE-SPEED DRIVE — *U S Electrical Motors Inc, Box 2058 Terminal Annex, Los Angeles 54, Calif.* Varitrol unit, when used with company's Varidrive units, is capable of maintaining any speed within its range to within ¼ of 1% accuracy regardless of load fluctuations. It operates on tight-loop, high-response, feedback principle (May 20, p226).

VARIABLE-SPEED DRIVE — *Raytheon Mfg Co, Commercial Equipment Div, 100 River St, Waltham 54, Mass.* Electronic system, consisting of operator's control station, electronic control unit and dc motor, is available in capacities from 30 to 150 hp. Small low-power dc voltage controls motor speed—this is available as function of speed setting on operator's control station; or one or more external voltages may be used (Feb 25, p190).

SPEED REDUCER—*Revco, Inc, 1900 Lyndale Ave S, Minneapolis, Minn.* Zero-Max is motorized package unit available in eight basic models delivering 10 to 30-in.-lb torque with cw or ccw output shaft rotation. Instant speed changes can be made while unit is running or stopped; screw control provides fine adjustment. Standard 48-frame motor is 115v, 60c, single phase (May 6, p180).

CONTROLLED POWER DRIVES — *Cycledynamics, Inc, 19025 W Davison, Detroit 23, Mich.* Cycledyne line consists of series of start-stop power drives and control devices. Each Cycledyne provides all cyclic operational functions for a machine—starting, stopping, inching, positioning, holding, accelerating, decelerating, and torque limiting. Altogether, over 200 combinations are possible with these versatile units (Jul 1, p134).

VARIABLE SPEED DRIVE—*Revco, Inc, 1900 Lyndale Ave S, Minneapolis 5, Minn.* Zero-Max is now available in a reversing model. Shaft rotation reversal is achieved without reversing motor. Unit is available in models delivering 10, 15 and 20-in.-lb. torque. Speeds are infinitely adjustable from 0 to 400 rpm. Prices start at $80 (Sep 23, p208).

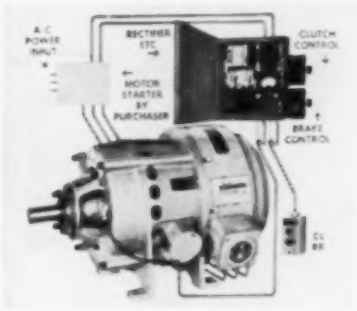
ADJUSTABLE SPEED DRIVES — *General Electric Co, Direct Current Motor and Generator Dept, Schenectady 5, NY.* Speed Variators are available in ratings of 3 through 150 hp and in speed ranges of 8 to 1 and higher. Amplistat regulator with silicon rectifiers is standard on new line (Dec 16, p196).

STATIC CONTROL UNIT — *General Electric Co, Schenectady 5, NY.* Plug-in static control unit is addition to G E low-power static switching system (AM—Dec 31 '56, p 122). Unit provides protective functions by means of electrically isolated control windings on magnetic amplifier unit. Device is equipped with monitor light (May 20, p210).

MAGNETIC MOTOR STARTERS — *General Electric Co, Schenectady 5, NY.* Designed for use with machine tools, pumps, hoists and saws, Size 0 and 1 starters are 42% smaller than previous open forms. Open form measures 4½ in. high by 5 3/32 in. wide. Enclosed form is 7¼ in. high, 6½ in. wide, and 4⅝ in. deep. Size 0 is rated up to 5 hp at 440v; Size 1, 10 hp at 440 v. Units come in contactor, non-reversing, reversing, combination, and multi-speed forms. (Aug 12, p168).

LOAD CELL—*Dynamic Instrument Co, Inc, 28 Carleton St, Cambridge, Mass.* Strain-gage force pickup measures forces up to 1 ton in applications where deflection caused by load is limited to 0.0035 in. Unit weighs 2 oz and is available in ranges from 0 to 5 lb up to 0 to 2000 lb. Temperature range is -65 to + 350 F (Sep 9, p202).

MOTOR FIELD COIL—*Allis-Chalmers Mfg Co, 999 S 70th St, Milwaukee, Wis.* Insulating system of coil protects motor against atmospheric contaminants and destructive mechanical forces. Insulation consists of specially-oriented glass fibers augmented by heat-stable resins (Mar 11, p202).

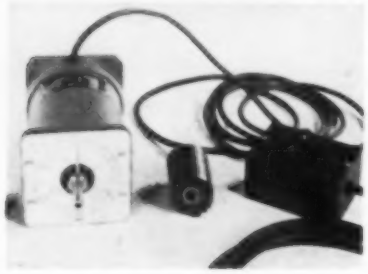


MACHINE DRIVE—*Erickson Merritt, Inc, 52½ Pine St, Lockport, NY.* Package motor-clutch-brake drive, complete with controls, provides fast or slow starts with acceleration, deceleration, and/or stops in automatic cycles up to 30 per min. Unit is available in sizes from 1½ to 15 hp, all with constant torque at speeds between 600 and 1800 rpm. Drives are used to operate shearing and punching machines, conveyors, and indexing tables (Jun 17, p192).

PUSHBUTTONS — *Furnas Electric Co, 1944 W McKee St, Batavia, Ill.* Heavy-duty Oil Tight pushbuttons are available rated to 550 v ac-dc. Line also includes selector switches, selector pushbuttons, pilot lights, and accessories such as mushroom head, lever and key lock. Catalog 5606 (Apr 22, p216).

LIMIT SWITCH—*R B Denison Manufacturing Co, 102 St Clair Ave, NW, Cleveland 13, Ohio.* Loxswitch Model L100WSO provides two isolated circuits with overlapping contact arrangement. Spring return mechanism holds one circuit closed. Actuating the operating lever approximately 5° closes both circuits; travel of an additional 4° opens first circuit while keeping second closed. Spring return reverses procedure (Oct 7, p170).

ELECTRO-MAGNETIC CLUTCHES—*Stearns Electric Corp, 120 N Broadway, Milwaukee 2, Wis.* Model GS electric clutches can be actuated remote or direct with automatic or manual controls. Plug-in electrical connections do away with the slip rings or brushes. Units are available for operation with 12, 24, 90 or 115-v dc, and are available in sizes from 4 to 9-in. dia (Sep 23, p202).



POSITIONING MOTORS — *B A Wesche Electric Co, Cincinnati 42, Ohio.* Accurate remote power positioning without feedback reference is now made practical by two new lines of motors. One is a step motor which indexes in 60°, 30°, 15° or smaller steps; the other is an induction motor which provides continuously adjustable power positioning (Oct 7, p182).

TROUBLE-SHOOTING UNIT—*Snyder Tool & Engineering Co, 3400 E Lafayette Ave, Detroit 7, Mich.* Designed to facilitate trouble-shooting on complicated machine tool control panels, the Circuit Sleuth System consists of terminal strips in the control panel to which all internal connections are wired. If machine stops, maintenance man looks at light panel and tells from the lights that are out the machine location and operation where the trouble exists (Oct 7, p165).

MOTOR PROTECTING RELAY — *Electrical Service Co, PO Box 1039, Greenville, Tex.* Esco Type TS protects 3-phase induction motor of any capacity and voltage against shaft overload, voltage unbalance, single-phasing, and undervoltage. Unit will "drop-out" the motor when any one or combination of factors cause dangerous temperature increases (Jul 1, p160).

STATIONARY-MAGNET CLUTCH—*Stearns Electric Corp, 120 N Broadway, Milwaukee 2, Wis.* Model 5 SM incorporates magnet body, drive member, and driven member. Units, manufactured in sizes from 1⅜ in. in dia up to 5 in., with torque ranges from 25 oz.-in. up to 170- in.-lb, are wound for direct current, with max ratings from 28 v on smaller clutches to 90 v on larger sizes (Dec 2, p154).

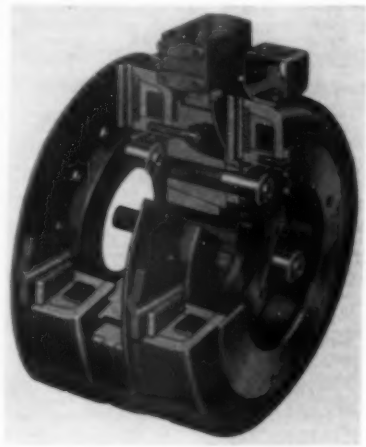
BRAKE MOTOR—*Cleveland Electric Motor Co, 5213 Chester Ave, Cleveland 3, Ohio.* Cle-Matic F has built-in mechanical brake, and is designed for stopping, braking, overhauling loads, as holding brake, hoist brake and to stop motor coasting between operations. Motors are available in polyphase designs, 1800, 1200 and 900 rpm, and some slower and multispeed designs (Jul 15, p186).

AUTOMATIC CLUTCH — *Salsbury Corp, Power Transmission Div, 1161 E Florence Ave, Los Angeles 1, Calif.* Series 800 clutch features built-in ventilating system to provide rapid heat dissipation for loads requiring extended acceleration periods. Clutch has a friction area of 40 sq in. Unit is designed for use on electric motors (2 to 5 hp at 1750 rpm) and gasoline engines (6 to 9 hp) (Oct 7, p184).

STARTER — *Electric Controller & Mfg Co, Div of Square D Co, Cleveland 28, Ohio.* High voltage starter, Type ZHA (2200-4800 volts) is self-contained, complete with control transformer supplying low voltage for pushbutton circuits. It is furnished in three interrupting ratings for squirrel cage, synchronous and wound-rotor motors (Mar 25, p227).

CAM TIMER—*Cramer Controls Corp, Centerbrook, Conn.* Type 571 is available with 1 through 4 poles, contacts for 30-amp loads at 115v ac, speeds from 1 rpm to 1 rev per 8 days. Faster speeds can be obtained with lower switch ratings. Unit is 2¾ in. square by 2¾ in. deep, including motor (May 20, p224).

ENCLOSED LIMIT SWITCH —*Illinois Tool Works, Licon Switch Div, 2501 N Keeler Ave, Chicago 39, Ill.* Type 30 switch, for control, limit, and safety applications, is available in component form. Included are three actuators and three housings; components can be used to form 16 types of switches (Apr 8, p209).



ELECTRO-MAGNETIC BRAKES — *Eaton Mfg Co, Dynamatic Div, Cleveland 10, Ohio.* Dyna-torQ line of electro-magnetic disk-type friction brakes and clutches are available in a wide range of sizes. Four types now in production are the basic clutch, basic brake, clutch-brake, and the clutch-coupling. Corresponding parts of all units in a given size are interchangeable (Nov 18, p206).

BRAKES—*Warner Electric Brake & Clutch Co, Beloit, Wis.* Power-safe brakes combine high torque and fast cycling with ability to hold or stop load if power fails. Four basic sizes are offered: power torque ratings range from 125 to 650 ft-lb, and fail-safe torque ratings from 33 to 205 ft-lb (Jun 17, p194).

ELECTRICAL RELAYS — *Arrow-Hart & Hegeman Electric Co, Hartford, Conn.* Relays are offered in two sizes, 0 and 00, and two types, FMP (fixed multiple pole) and IMP (interchangeable multiple pole). The size 00 relay is rated at 10 amps, 600v ac; size 0 at 15 amp, 600v ac. Complete line can be supplied with 2, 3, 4, 6, or 8 poles (May 6, p188).

POWER UNIT—*U S Electrical Motors Inc, Box 2058 Terminal Annex, Los Angeles 54, Calif.* Power unit for Varidyne System is designed with drive motor and alternator on same side for applications where space is a factor. System is designed for coordinating machinery and multiple-drive operations (Mar 11, p177).

ELECTRIC VALVE OPERATOR — *Jordan Co, 3235 W Hampton Ave, Milwaukee 9, Wis.* SM-11-X Valvetrol provides proportional flow control from ac or dc signal, mounts directly on stem of rotary valves. Built-in precision potentiometer or differential transformer provide positioning accuracies of ± 1/5 of 1% of full scale for standard models, or ± 1/25 of 1% in special types (Dec 30, p139).

SPEED REDUCER CONTROL — *Revco, Inc, 1900 Lyndale Ave S, Minneapolis 3, Minn.* Screw control which provides sensitive speed adjustment on Zero-Max variable speed reducers is available as optional equipment on new units or in kit form for Z-M's now in service. Fifty revolutions cover full speed range. Price is $9 (Jan 14, p192).

MOTOR STARTERS—*Allis-Chalmers Mfg Co, Milwaukee 1, Wis.* Line of motor starters, 2300 to 4160-v, is designed for full or reduced voltage starting, reversing or non-reversing, dynamic braking or multi-speed control of squirrel-cage synchronous or wound-rotor motors. Unit is 34 in. wide by 32 in. deep and is available with either air break or oil immersed contactors (Nov 18, p212).

CLUTCH — *Fawick Airflex Div, Fawick Corp, 9919 Clinton Rd, Cleveland 11, Ohio.* Magnetic clutch, Model SC, has comparatively short axial and small radial dimensions, and is furnished in stationary-field or brush types for either wet or dry operation. Decay time and residual drag are said to be reduced to minimum. Chuck comes in bore sizes from 2 to 13 in. (Jun 17, p194).

POSITIONING CONTROL — *Wallson Associates, Ltd, 89 Shepherd Ave, Newark, NJ.* Model AS employs bridge circuit and reportedly gives positioning accuracy of 0.5% and repeatability of 0.25%. Applications include positioning of valves and dampers, control element in automatic selection equipment, and remote instrumentation (Mar 11, p180).

REMOTE CONTROL—*Jordan Co, Inc, 3235 W Hampton Ave, Milwaukee 9, Wis.* Follow-up type remote control called Diatrol features vernier dial which is set to desired position of a valve, variable speed drive control, jack or rheostat. A control motor, with built-in or externally-driven potentiometer, adjusts the valve or drive until proper setting is reached (Apr 22, p200).

TIME DELAY RELAYS — *Elastic Stop Nut Corp of America, AGA Div, Elizabeth, NJ.* Agastats are available with dial head adjustment and four timing ranges, 1/10 to 3 sec, 1/10 to 10 sec, 10 sec to 2 min, 30 sec to 15 min. Complete adjustment is attained by one revolution of dial (Jan 4, p190).

ROTARY LIMIT SWITCH—*Clearing Machine Corp, 6499 W 65th St, Chicago 38, Ill.* Switch is rotary cam unit designed for timing of material handling and other functions necessary for automatic press operation. Switch is placed within dust-tight and oil-free compartment built into press frame, where it operates from press driveshaft. Switch is furnished in 3 sizes: four-cam, nine-cam, and eleven-cam (Feb 11, p164).

TILTING MOTOR BASE — *Lovejoy Flexible Coupling Co, 4966 W Lake St, Chicago 44, Ill.* Motor base compensates for belt tension when speed changes are made while machine is running, and also makes belt changing easier. Base is 5½ by 7½ in.; one size fits all fractional-hp motors (Sep 9, p206).

CONTROL VALVES — *Valvair Corp, 454 Morgan Ave, Akron 11, Ohio.* High-Speed Inline valves are offered with integral Valvair PC solenoid pilots or for remote pilot operation, in both 2 and 3-way types, NO or NC. Working pressures range from 10 to 200 psi, in 1, 1¼, and 1½-in. sizes (Jul 15, p202).

BRAKEMOTORS—*Reliance Electric & Engineering Co, 1088 Ivanhoe Rd, Cleveland 10, Ohio.* Brakemotors that stop instantly and hold heavy loads are available in all types of enclosures. Motors feature torque ranges from 3 ft-lb to 345 ft-lb, molded friction linings, and one-operation torque setting. In event of power failure or low voltage, "dead-man" operation sets and holds load (Apr 8, p201).

SPEED CONTROLLER — *Warren Mfg Co, Littleton, Mass.* AC-motor speed controller, type 2027, provides regulation of ± 1% over a speed range of 1050 to 1530 rpm through power magnetic amplifiers in series with rotor-circuit resistors. Cabinet measures 51 in. high, 24¾ in. wide and 21 in. deep (Oct 21, p222).

MOTOR BASE—*American Pulley Co, Power-Transmission Div, 4200 Wissahickon Ave, Philadelphia 29, Penna.* With motor base designated Adjusto-Slide, belt take-up is accomplished by adjusting one screw—an adjustment that can be made without stopping motor. Base available for NEMA frame sizes from 182 through 326 V in both old and new ratings (Aug 26, p158).

DC POWER SUPPLY—*Electro Products Laboratories, 4500 N Ravenswood Ave, Chicago 40, Ill.* GFA Universal converts ac current to dc for testing industrial dc equipment and offers a continuous variable 0 to 125 volts up to 10 amps with less than 1% ripple at top load. Unit operates on 115-v, 50/60-cycle input and can be used for testing relays and solenoids, and plating operation (Oct 7, p176).

TIMING RELAY—*Square D Co, 4041 N Richards St, Milwaukee 12, Wis.* Pneumatic relay, measuring only 2½ in. wide by 7⅝ in. high, meets restricted space requirements of machine tool control panels. It offers adjustable timing range of 0.2 sec to 3 min. with an accuracy of ± 10%. Models available for ac and dc current (Sep 23, p207).

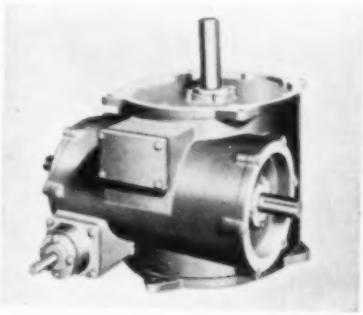
VALVE—*Webster Electric Co, 1909 Clark St, Racine, Wis.* Pilot-operated relief valve provides instant reaction and silent, clog-free service. It has a capacity of 20 gpm and can be set for pressures ranging from 500 to 2000 psi. Valve is 4 15/16 in. long and reportedly allows about 40% more work output than ordinary valve (Oct 7, p196).

SWITCHES — *Micro Switch, Division of Minneapolis-Honeywell Regulator Co, Freeport, Ill.* Two-circuit limit switches recently introduced include a roller-plunger-actuated unit, 5 LSI, said to be especially effective for cam or slide operations, that can be rotated 90° from switch cover plate. Model 2LSI, a plunger-actuated switch, offers a full ¼ in. of overtravel (Dec 16, p184).

SWITCH — *Robertshaw-Fulton Controls Co, Acro Div, 110 E Otterman St, Columbus, Ohio.* Heavy-duty snap-action switch, Duo-Snap, handles up to 2 hp, is furnished in four different terminal and circuit arrangements permitting at least six circuit variations. Electrical rating for the 2-in.-long unit is 2 hp, 230v ac; 1 hp, 150v ac, and for pilot duty, 20 amps, 250 v ac (Nov 4, p204).

ELECTRIC CLUTCHES AND BRAKES—*Simplatrol Products Corp, 24 Salisbury St, Worcester, Mass.* Additions to Simplatrol line consist of five styles in six sizes from 4 to 12-in. dia. with torque outputs from 10 oz-in. to approx 450 ft-lb. Compact power conversion unit can be supplied to transform 110v ac supply to 6, 12, 24, or 90v dc (Nov 4, p203).

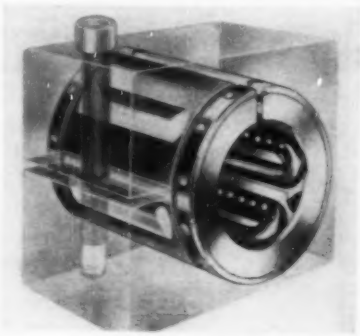
MACHINE TOOL SWITCH—*Robertshaw-Fulton Controls Co, Acro Div, Columbus 16, Ohio.* Switch can control as many as four separate circuits. Actuator is adjustable 360° on two planes. Two types are available; the double action model is used for controlling switch contacts when actuator is moved to either side of center or the "at rest" position. Electrical rating: 2 hp 230-v ac; 1 hp 115-v ac; 20 amp 125-250-v ac; pilot duty 250-v ac (Dec 16, p182).



INDEXING UNIT—*Standard Tool & Mfg Co, 237 Laurel Ave, Kearney, NJ.* Automatic indexing unit has worm reduction unit with 10 to 1, 20 to 1, or 40 to 1 reduction. Increments of either 8, 12, 16, or 20 can be obtained during one complete cycle or revolution of index table. Worm and gear connections to input shaft drive cylindrical cam which in turn provides motion to indexing table (Jun 3, p166).

TRANSMISSION—*Geo E Clentimack Co, Inc, 229 West St, North Attleboro, Mass.* Variable-speed unit is adjustable over range of 8:1, either manually or automatically while unit is at standstill or in motion. Control can be electrical, mechanical, hydraulic, or pneumatic. Power is transmitted through multiple contact of driven and driving disks that are free floating on splined shafts (Apr 8, p196).

ROLLER BEARING—*Torrington Co, Torrington, Conn.* Drawn-cup unit is non-separable assembly designed for applications requiring minimum cross-section, high speed, and long pre-greased life. They are made in six sizes for 5/16-in.- to 1⅛-in.-shaft diameters (May 6, p182).



LINEAR BEARING—*Thomson Industries, Inc, Manhasset, NY.* New type ball bearing for linear motion, the Adjustable Diameter Ball Bushing is split longitudinally and is designed to provide line-to-line or slight preload fits when mounted in an adjustable-dia housing. Often the bearing is used in a housing that is merely split and provided with an adjusting screw. Unit is available in standard sizes for shaft dia from 1 to 4 in. (Sep 23, p189).

SPEED REDUCER—*Anchor Steel & Conveyor Co, 6906 Kingsley, Dearborn, Mich.* Reducer for conveyor drives is designed primarily for applications requiring a vertical output shaft. Ratio is easily changed in the field; shaft position can be changed from vertically up to down. Unit also features dry-well construction and decreased maintenance time (Aug 28, p168).

GEAR UNIT—*U S Electrical Motors, Inc, Box 2058, Terminal Annex, Los Angeles 54, Calif.* Motomount Syncro-gear meets JIC requirements for operations requiring motor separate from gear unit. Available for variety of mounting positions, unit comes with double-reduction gears in ratios from 7.6:1 to 47:1, speed ranges from 37 to 280 rpm, and hp ratings from 1 to 30 (Aug 26, p160).

SPEED REDUCERS—*Winsmith, Inc, Springville (Erie County), NY.* Series ST torque-arm type and Series SF flange-mounted type worm-gear speed reducers are available in three sizes in ratios ranging from 7.5:1 to 77:1, hp range of 0.63 to 8.82, and a max output torque range of 8.16 to 7678 in.-lb. Reducers mount direct on shaft of the driven machine (Sep 9, p208).

WORM-GEAR SPEED REDUCER—*Tulsa Winch, Tulsa, Okla.* Model G4S reducer provides 29 to 1 reduction, is rated at 875 ft-lb output torque, and is designed for intermittent operation. Reducer can be driven by electric, gas, hydraulic motor, or manually, or by single-speed power take-off if truck mounted. Cast-aluminum housing reduces weight to 36 lb (Jun 3, p176).

WORM GEARS — *Rockwood Pulley Mfg Co, Inc, 20 Crosby St, New York 13, NY.* Crofts Radiation worm reducers are fan cooled and are available in sizes from fractional to 450 hp (Feb 11, p174).

BALL BEARINGS—*Split Ballbearing Corp, Lebanon, NH.* Bearings featuring fractured outer rings have increased life and performance. By fracturing outer ring at one point, bearing may be opened sufficiently to introduce max number of balls. Ring closes by its own resiliency and is secured by circumferential holding wires or rings (May 20, p230).

HEADED PINS—*Durant Tool Supply Co, 1-15 Thurbers Ave, Providence, RI.* Royal line of headed pins, for use in metal stamping tools and in plastic mold manufacturing, are available in range of sizes from 0.020 through 0.1875 in. in increments of 0.001 in. Pins have hardness of Rc 58-60, with heads left soft. Prices range from $12 to $19 per box of 100 pins (May 20, p217).

BEARING—*General Bearing Co, Inc, 47 Roselle St, Mineola, NY.* Rollset is combination of stud and nylon roller. Self-lubricating quality of nylon roller assures quiet operation, smooth rolling, and resistance to wear. Stud can be supplied in zinc or cadmium-plated steel, stainless, or aluminum. It is left soft for riveting and can be supplied threaded, knurled, or grooved for special assemblies (Jun 3, p178).

GUIDE PIN BUSHINGS—*WW Alloys, Inc, Div of Fansteel Metallurgical Corp, 11644 Cloverdale Ave, Detroit 4, Mich.* 26 standard sizes are provided with double-figure-8 oil grooves on inside for efficient lubrication. 16 standard sizes are available rough-bored and faced, finishing to be done by the user. Bushings are made of aluminum-bronze alloy (Jan 14, p188).

CLUTCHES — *Formsprag Co, 23601 Hoover Rd, Van Dyke, Mich.* Large-bore backstop clutches, available in bore sizes from 6 to 12 in., with torque capacities from 18,500 to 136,500 ft-lb, replace previous models. Models FS-1100, 1150, 1200, 1250, 1300, and 1400 have individually energized sprags, ball-bearing construction, mechanical seals, and grease lubrication (May 20, p217).

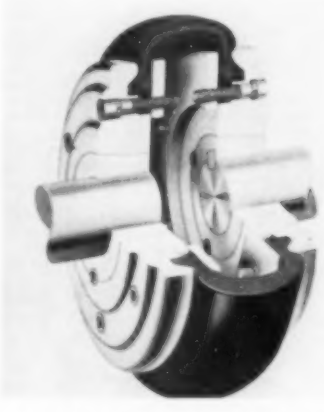
FLEXIBLE SHAFTS—*S S White Industrial Div, 10 E 40 St, New York, 16 NY.* Flexible shafts are available in six models, three designed for power drive, and three for remote control applications. Remote control models handle torques ranging from 1/6 in.-lb to 50 in.-lb. Shafts are stocked in 3-ft lengths and come equipped with female couplings at each end (Sep 23, p210).

CHAIN—*Cambridge Wire Cloth Co, Cambridge, Md.* Pintle-type chain, for woven-wire belt installations where chain drive is required, features a heavier shoulder which distributes bearing stresses, a free-floating connecting pin, and increased pin diameter. Chain will operate on standard sprockets (Jun 3, p174).

SLIP COUPLING—*Hilliard Corp, 100 W Fourth St, Elmira, NY.* L2 coupling, for directly connecting two shaft ends, is available with bore dimensions of ½, ⅝, and ¾-in. dia in either member. Type 323 has max torque of 9 ft-lb. Type 323A is recommended for applications calling for torque of 2 ft-lb or less (May 6, p209).

BALL BEARINGS—*Hoover Ball and Bearing Co, Sales Dept, Ann Arbor, Mich.* Ball bearings with Teflon seals are recommended for high speed operations or where periodic lubrication or servicing is not practical. Seals provide positive line contact between inner raceway of bearing and permanently attached full metal shields. Bearings are available in light and medium series (Nov 4, p204).

GEARS—*Climax Metal Products Co, 836 E 140th St, Cleveland 10, Ohio.* Molded nylon spur gears are available in 48-pitch by ¼-in. face by 14½° pressure angle, and 32-pitch, 3/16-in. face by 14½° pressure angle. Both are furnished with standard bore sizes from 3/32 to ⅜ in. Thrust washers of 1/16-in. molded stock are available in sizes from ¼-in. ID by ⅜-in. OD to 1½-in. ID by 3-in. OD (Nov 4, p204).



FLEXIBLE COUPLING—*Dodge Mfg Corp, Mishawaka, Ind.* Paraflex coupling consists of flexible tire clamped between two hubs which are mounted on the shafts to be coupled. Unit will take angular mis-alignment up to 4°, parallel mis-alignment up to ¼ in., and end-float up to 5/16 in. (Jul 29, p144).

SEALS—*Chicago Rawhide Mfg Co, 1301 Elston Ave, Chicago 22, Ill.* End face seals, designated Standard, are reported to provide maximum sealing efficiency in minimum space. They are available in two series—long and short. Specifications include ¾ to 4-in. shaft sizes, pressures to 500 psi, temperatures to 500 F, peripheral speeds to 15,000 fpm (Dec 30, p139).

PULLEYS—*Lovejoy Flexible Coupling Co, 4966 West Lake St, Chicago 44, Ill.* B-belt pulleys with speed ratio of 2½:1 can be installed on old or new equipment. Model 175 is rated at 2/3 hp at 1150 rpm at 1 hp at 1750 rpm; Model 180 at 1 hp at 1150 rpm and 1½ at 1750 rpm. Pitch diameter is 5.93 in.; length of bore is 2¾ in. (May 20, p196).

COUPLINGS—*PIC Design Corp, Subsidiary of Benrus Watch Co, 477 Atlantic Ave, East Rockaway, NY.* Miniature precision couplings, Type T, are made of stainless steel with a nylon center block or an oil-less center block. Furnished in pin-type and clamp-type hubs in bore sizes of ⅛ to ¼-in. dia (Dec 16, p188).

GEARS—*PIC Design Corp, Subsidiary of Benrus Watch Co, 477 Atlantic Ave, East Rockaway, NY.* Precision spur gears, 24 and 32 pitch, are available in stainless, aluminum, nylon, and phenolic materials with variety of bore sizes from ⅛ to ¼-in. dia. Supplement catalog 13 (Dec 16, p187).

BUSHINGS — *Browning Manufacturing Co, Maysville, Ky.* New line of 16 stock spline bore bushings added to Browning products provides means of application of sheaves, hubs, sprockets, couplings, and other power transmission items to spline bore shafts. Bulletin HB-101-A (Dec 16, p193).

SPHERICAL BEARINGS — *Carter Engineering Co, Ferrysburg, Mich.* Spherical rod end bearings, designated Alinabal, are available with self-lubricating sintered metal balls and full spherical race of hardened steel ground to match ball curvature. Bore sizes currently stocked are ¼ to 1 in. in both male and female type (Dec 30, p138).

GEAR BLANKS—*PIC Design Corp, Div of Benrus Watch Co, Inc, 477 Atlantic Ave, East Rockaway, LI, NY.* Blanks for such applications as non-standard gears, ratchets, sector gears, handwheels, cranks, and pulley wheels are available in four materials: 303 stainless, 24-ST aluminum, nylon, and linen phenolic (May 20, p226).

AIR CYLINDER—*Bimba Hardware & Mfg Co, 101 Main St, Monee, Ill.* Model 091 Non-Repair cylinder is single-acting spring-return type for clamping, moving, holding, ejecting. Unit will exert force equal to 90% of air line pressure for max stroke of 1 in. (Mar 11, p198).

REVERSE-REDUCTION UNIT—*J B Foote Foundry Co, Fredericktown, Ohio.* Unit for 5-hp gasoline engines incorporates a 2-to-1 reduction, neutral, forward, and reverse. Featured is a double-acting clutch that permits operator to shift from forward to reverse or to neutral at any engine speed (Jan 14, p181).

MINIATURE DIFFERENTIALS — *Metron Instrument Co, 432 Lincoln St, Denver 3, Colo.* Units add or subtract two rotating inputs, or angular inputs. 34 ratios from 1:1 to 27:1 are offered. Backlash between in-line shafts is 4° or less. Units with anti-backlash feature are also available (Jan 14, p182).

PRECISION SPRING CLUTCHES—*Curtiss-Wright Corp, Marquette Division, 1145 Galewood Drive, Cleveland 10, Ohio.* Standard line includes two over-running units: OB ball-bearing type designed for 20 to 300 ft-lb torque capacity and shaft sizes of ⅝ to 3 in.; and PB sleeve-bearing type in 20 to 100 in.-lb torque range for shafts of 3/16 to ⅝ in. (Jul 15, p186).

ADJUSTABLE SPEED PULLEY — *American Pulley Co, 4200 Wissahickon Ave, Philadelphia 29, Penna.* Drives permit stepless speed adjustment up to 26% in horsepower range around 15 to 20 hp at speeds from 1160 to 1750 rpm. Each sheave has two C-grooves. Unit is available in three sizes, with pitch diameters of 8.5 to 10.7, 9.5 to 11.7, and 10.5 to 12.7 in. (Jul 29, p158).

FLEXIBLE SHAFT COUPLINGS — *Diamond Chain Co, Inc, Dept 406, 402 Kentucky Ave, Indianapolis 7, Ind.* Couplings of double-roller-chain type are available with interchangeable taper bushings. Taper busings are supplied with bores in increments of 1/16 in. so that all standard shaft diameters can be met from stock. Steel couplings absorb moderate end-play and misalignments (Oct 7, p198).

SPEED REDUCER—*General Electric Co, Gear Motor and Transmission Components Dept, Schenectady 5, NY.* Shaft-mounted speed reducer is available in most ratings from ¼ to 40 hp at output speeds from 10 to 420 rpm. Unit has full 360° mounting range around driven shaft and is available in single and double reduction ratings, in ratios of 5:1 and 15:1 (Jul 1, p156).

SPEED REDUCERS — *Rampe Mfg Co, 14915 Woodworth Ave, Cleveland 10, Ohio.* Lowcost units for fractional-hp motors are available with ratios of 15:1, 20:1, 30:1, 48:1, and 60:1. Combinations of these reducers will produce units with ratios from 225:1 to 3600:1. Size of unit: 2⅝ in. wide, 1⅝ in. deep, 3⅜ in. high (Jun 17, p229).

NYLON BEARINGS—*Thomson Industries, Inc, Manhasset, NY.* Snap-In Nyliners have flanges on both ends which hold bearings in sheet metal or thin plates. Helical split allows installation. Bearings come in two lengths, for plate thicknesses from 0.040 to 0.075 in. and 0.072 to 0.135 in.; bore dia range from ⅛ to ¾ in. (Apr 22, p219).

DRIVES AND COUPLINGS—*Dodge Mfg Corp, Mishawaka, Ind.* Flexidyne No. 15D and 15C are recommended for use with motors rated up to 75 hp at 1750 rpm. The 15D drive is designed for V-belt drive from motor to load; 15C coupling is for direct shaft-to-shaft connection. Bulletins A-65A and A-646A (Oct 7, p192).

VARIABLE SPEED TRANSMISSION —*Graham Transmission Inc, Menomonee Falls, Wis.* High accuracy unit designed for traverse applications on winding machinery provides infinite speed range and maintains preset ratio between output and input shaft in spite of wide fluctuations of input speed, including jogging, fast acceleration and deceleration (Sep 9, p190).

ARBOR SUPPORT BEARINGS—*Briney Mfg Co, PO Box 2208, Pontiac, Mich.* Designed for milling machines, units provide greater bearing contact area, resulting in high load capacity, by utilization of many more balls than conventional anti-friction bearings. Inexpensive collars are available, providing wide range of arbor interchangeability. Bearing does not project into work area (Dec 2, p176).

FLEXIBLE COUPLING—*T B Wood's Sons Co, Chambersburg, Penna.* Sure-Flex is designed to tolerate angular misalignment up to 1°, parallel misalignment of from 1/32 to 1/16 in., depending on shaft size, and free end-float up to ⅛ in., depending on size. There are three basic parts: two hub flanges and a 2-piece rubber sleeve. Coupling is available in 6 sizes ranging from 3 to 80 hp. Shaft bores are available from ⅝ to 2¼ in. (Nov 18, p196).

SPEED REDUCERS—*Rockwood Pulley Mfg Co, Inc, 20 Crosby St, New York 13, NY.* Parallel-shaft reducers in ½ to 20 hp and in 12 ratios are available without motors. Design permits input shaft to be driven by coupling, chain or V-belt drive, thus resulting in increased variations in output speeds. Extremely quiet in operation, units are designed to carry normal overhung loads on output shaft (Aug 12, p190).

SPEED CHANGER—*Custanite Corp, 1228 Utica Ave, Brooklyn 3, NY.* Ratex speed changer, using self-compensating floating-pulley arrangement, permits changing of machine speeds instantly without stopping motor. Designed for drillpresses, power and feed controls, conveyors, and other devices, it offers 6 to 1 speed ratio. Unit attaches to any standard 2¾-in. drill-press support post (Sep 9, p192).

FLEXIBLE COUPLING — *Lovejoy Flexible Coupling Co, 4966 W Lake St, Chicago 44, Ill.* Flexible coupling made of cast aluminum uses a one-piece spider-type load cushion. Spider may be reversed. Model L-075 is rated for loads of 1/10 hp at 100 rpm up to 2 hp at 3600 rpm. Bore sizes range from ¼ to ⅞ in. Dimensions are 1¾-in. dia by 2⅛ in. long (Oct 7, p192).

AUTOMATIC CLUTCH TRANSMISSION — *Western Manufacturing Co, 3400 Scotten Ave, Detroit 10, Mich.* Model 8100-EC allows for speed changes under power, can also be reversed without stopping or reversing the motor. Torque input is 700 lb-in., output 2800 lb-in. Capacity of transmission is from 1:1 up to a max reduction of 6:1. Electric clutches are used to change speeds in connection with tape, time limit, cam, or other automatic controls (Dec 2, p178).

FLEXIBLE LINK SHAFTS — *Clark Flexible Link Shaft Co, PO Box 73, Newton Highlands 61, Mass.* Shafts consist of trunnion blocks and two half links fastened together with screws or rivets. Applications include continuous universal joints, remote control, flexible shafts, power drives, and couplings. They are available in brass (⅛ to 1½-in. dia) and steel (⅝ to 3-in. dia) (Oct 21, p216).

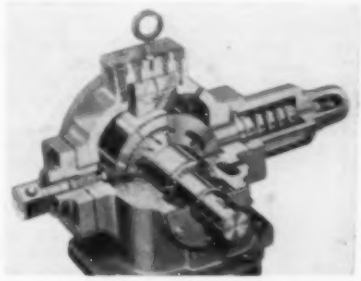
V-BELT CLUTCH—*Rev-O-Loc Clutch Corp, PO Box 1806, Milwaukee, Wis.* Rev-O-Loc type AV, for electric motors and gasoline engines, pulls up to 3 hp at 3600 rpm. Unit automatically adjusts for wide variations in belt tension, permits latitude in pulley centering. Weight is 13 oz, pulley dia is 2⅜ in.; available with ½, ⅝ or ¾-in. bore (Jun 17, p220).

SPHERICAL BEARING — *Spherco, Sealmaster Bearing Div, Ridgeway, Aurora, Ill.* COM Series is available in 11 sizes. Consisting of a low-carbon steel outer race and a hardened steel ball, bearing has static load capacities ranging from 3250 to 54,700 lb, depending on size. Bulletin 257 (Nov 18, p214).

ROLLER BEARINGS—*SKF Industries, Inc, Front St & Erie Ave, Philadelphia 32, Penna.* Type C spherical bearings have been redesigned to provide 25 to 50% increased capacity, size for size, and up to 3½ times more service life. Available in sizes of 140-mm OD and larger, bearings have center instead of side lubrication (Mar 25, p225).

HANDKNOBS—*Northwestern Tool & Engineering Co, 117 Hollier Ave, Dayton 3, Ohio.* Aluminum handknobs are available with star-type or hex-type handles. Star type are available through-tapped or reamed; hex type, blind tapped or reamed; all plain knobs are centered. Sizes range up to 3-in.-max diameter. Minimum tensile strength is 20,000 psi (Jul 29, p160).

MINIATURE CLUTCH — *Barbour-Stockwell Co, Cambridge, Mass.* Design makes possible engagement or disengagement of any or all parts of power transmission drive installations, such as tachometer or counter drives. Once readings or operations have been completed, slight turn of control disengages clutch until further readings are needed (May 20, p226).



PUMP — *Racine Hydraulics & Machinery, Inc, Racine, Wis.* Model R pump, for use in machine tool feed systems, hydraulic presses, and mobile equipment, delivers 40 gpm at 1200 rpm, and is designed for 1000-psi continuous operating pressure and 1250 psi intermittent. Delivery can be manually adjusted (Jun 17, p232).

VALVE—*Rivett, Inc, Brighton 35, Mass.* Hydraulic 4-way valve, oil-pressure-operated Model 5835 for 1500 psi pressure, is available in sizes, ¼, ⅜, ½, ¾, 1, 1¼, 1½ in. Catalog 204 (Jul 29, p143).

PARTS and MATERIALS—hydraulic

VALVE — *Sinclair-Collins Valve Co, Akron, Ohio.* Valve designed for automated control of presses and plastic molding machines is fully automatic 4000-lb, 3-way neutral 2-pressure control valve. Upon actuation, valve applies low-pressure for closing of press; triggered by control timer interval or limit switch, high pressure is then applied. When cycle is over, high pressure cuts off, drain valve opens, and press opens (Aug 26, p182).

VALVE—*Sinclair-Collins Valve Co, Akron, Ohio.* Semi-automatic 4-way valve, designed for die-casting industry, provides leak-free service with water, glycol, or oil-base hydraulic fluids. Activated by integral double-acting cylinder controlled by single or double solenoid pilot-operated valve, E-400-X series comes in 1, 1½, and 2-in.-NPT sizes, for pressures up to 3000 psi (May 20, p212).

PUMP—*Vibro Mfg Co, Inc, Equi-Flow Div, Woodside, NY.* Variable-delivery pump develops 5700 psi and is intended for hydraulic power applications. Oil delivery can be adjusted to any value or can be left to vary automatically inversely with pressure changes. Sizes from 1½ to 30 hp are available (Jun 3, p176).

PISTON PUMP—*Dynex, Inc, 1500 S Muskego Ave, Milwaukee, Wis.* Series PF-3006 has 3000-psi maximum intermittent pressure and rated pressure of 2000 psi. The 25-lb unit will handle 2.8 gpm at 1200 rpm and 4.15 gpm at 1800 rpm. Rotation can be had in either direction, and unit can be mounted in any position (Jan 14, p185).

VALVE—*Valvair Corp, 454 Morgan Ave, Akron 11, Ohio.* Automatic directional valve affords instant switch-over from automatic to manual control of diaphragm-operated valves, cylinders and similar devices. Device is available with ¼- and ⅜-NPT ports (Apr 8, p180).

VALVES—*Valvair Corp, 454 Morgan Ave, Akron 11, Ohio.* Hi-Speed inline valves for brake, clutch, and other high-speed applications are available in 2 and 3-way types, NO or NC, with integral pilots or for remote pilot operation. Short poppet travel provides split-second response. Sizes range from ¼ to 1 in. NPT for working pressures of 10 to 200 psi (Jul 29, p164).

VALVE—*Techno Corp, 16 W 5th St, Erie, Penna.* Technocheck valve is designed for applications where hydraulic and air shocks of magnitude are encountered. Advantages are tight sealing and low pressure drop with no external dashpots, shafts, controls, or linkages required outside the valve. Sizes range from 4 to 36 in. in dia; furnished in variety of metals and alloys (Dec 30, p142).

VALVE—*Double A Products Co, Manchester, Mich.* Four-way valve, solenoid-controlled, pilot-operated, is now available in ⅜-in. size. Max operating pressure is 2000 psi; rated capacity is 8 gpm. Three models are available: double solenoid, no spring; single solenoid, spring offset; and double solenoid, spring centered (Oct 7, p192).

BUCKET PUMP — *Stewart-Warner Corp, Alemite Div, 1826 Diversey Pkwy, Chicago 14, Ill.* Portable bucket pump, called Big A, pumps oil or grease in any weather at pressures of 2500 to 5000 lb. Capacity is 35 lb. Available in seven models for all types of lube fittings, unit is equipped with gasket-sealed cover and foot valve (Sep 23, p208).

TRIPLE DISCHARGE PUMP — *Ruthman Machinery Co, Cincinnati 2, Ohio.* Model 5S-4520, for outside flange mounting, is available with either 1/10 hp, 3450 or 1725-rpm motor, and in ¼ hp at 3450 rpm. Various diameter impellers are available for capacities up to 30 gpm and for heads up to 27 ft (Dec 30, p134).

FITTINGS—*Telsco Fittings Division, 5422 Redfield St, Dallas, Texas.* Threadless pipe fittings will withstand traction forces up to 3600 lb. and hydrostatic pressures from 450 psi on 2-in. pipe to 5000 psi on ½-in. pipe. They are available in couplings, adapters, 90° elbows, and tees (Jul 29, p146).

FLARELESS TUBE FITTING — *Imperial Brass Mfg Co, Dept HSF, 1200 Harrison St, Chicago 7, Ill.* Hi-Seal makes butt-tight joint and is designed for full range of pressure conditions. Available in steel or stainless steel, in sizes for ⅛ to 1½-in.-OD tubing, fitting can be furnished with Dryseal pipe threads or straight threads with O-ring seal (Feb 11, p183).

LIQUID SPRING — *Taylor Devices Inc, 188 Main St, North Tonawanda, NY.* Model 416, ½-in. dia, develops 800-lb force at ¼-in. stroke with an 80-lb preload; is only 2 in. long plus ⅜-in. mounting stud. Unit, with standard ⅜-24 mounting thread, is preloaded and completely self-contained, eliminating stripper bolts, washers and mechanical springs (Nov 18, p220).

PUMP—*Randolph Co, 1018 Rosine St, Houston, Texas.* Pump designed to handle abrasive solutions and slurries features reduced maintenance because no part of pump is wetted by fluid. One continous flexible tube forms both inlet and outlet. It passes through body of pump where it is exposed to the action of a rotary squeegee (Jul 29, p146).

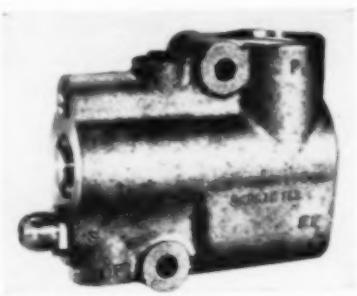
PUMPS—*Denison Engineering Div, American Brake Shoe Co, 1160 Dublin Rd, Columbus 16, Ohio.* Balanced-vane hydraulic pumps of T Series have rated deliveries to 100 gpm and speeds to 1800 rpm. Shaft rotation is changed by indexing cam ring to dowel pin hole with arrow indicating desired rotation. Designed for continuous 2000-psi service, pumps may be face, foot, or flange-mounted in any of four positions (May 20, p202).

HYDRAULIC VALVE — *Vanguard Engineering, 51 Washington Ave, Cranston 7, RI.* Ser-Van, a servo-type hydraulic valve, was developed as positive, flow-responsive, completely hydraulic control to meet need of automated machines for precision reversal of components with fail-safe protection, and for cyclic programs in continuous processing. Accuracy of reversal remains uniform with differentials from 5 to 2000 psi (Jun 17, p210).

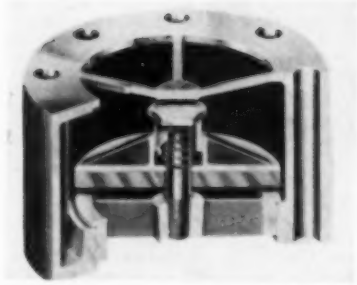
SPRAY NOZZLES—*Spraying Systems Co, Randolph St, Bellwood, Ill.* Nozzles providing extremely small capacities and atomization using hydraulic pressure only are available in 12 sizes, in both male and female pipe connections, with capacities ranging from 0.042 to 1.400 gpm at 20 psi (Jul 29, p162).

GEAR PUMP—*New Products Corp, 3636 Oakton St, Skokie, Ill.* Designed for fluid pressures up to 200 psi, pump can be adapted to many applications including oil pump, fuel injection pump, pump for low pressure machine tool mechanisms and other equipment. Rubber diaphragm installed under gears permits reasonable degree of backlash in mounting of gears in housing (Mar 25, p204).

PUMP—*Milton Roy Co, 1300 E Mermaid Lane, Philadelphia 18, Penna.* Pump meters toxic or corrosive chemicals from upright, 55-gal barrels against pressures up to 100 psi. Available in max capacities from 500 ml to 4 gal per hr, portable units have constant-speed, 1/3-hp, 115-v, 60-c motors. Capacities are adjustable from zero to max (Apr 8, p190).



FLOW DIVIDER — *New Products Corp, 3636 Oakton St, Skokie, Ill.* Model 1088 has adjustment device which can vary flow on controlled-flow side to the rate of flow in proper proportion to meet demand of job. It features built-in relief valve that bypasses oil back to sump when peak pressure setting of secondary flow is reached (Jun 17, p200).



CHECK VALVE—*Combination Pump Valve Co, 850 Preston St, Philadelphia 4, Penna.* Internal disk of new CPV models closes immediately as flow ceases, does not depend upon reverse flow for shutoff. This eliminates damaging surges of fluids, back-drop, and false registry on meters. Valve operates in any position. Standard sizes are from 2 to 18 in.; pressures range up to 2500 psi (Oct 7, p182).

PUMPS—*Gerotor May Corp, Owings Mills, Md.* Double pumps (series QGH-H) for hydraulic oil service are available with either base or flange mounting, with or without panel-mounted valve combinations. Capacities of each cartridge section range from 3 to 18 gpm, or any combination of these volumes; speeds of 1200 and 1800 rpm, pressures up to 2000 psi. Catalog section G-114 (Dec 30, p138).

CYLINDERS—*A K Allen Co, 57 Meserole Ave, Brooklyn 22, NY.* Cylinders, Type B, for air, water, or hydraulic service, are available in bores of 1½, 2, 2½, 3, and 4 in., with either single or double-ended rods. All sizes are also available as double-acting cylinders or single-acting spring-return cylinders (Jul 29, p160).

CONTROL VALVES—*Sinclair-Collins Valve Co, 454 Morgan Ave, Akron IV, Ohio.* Line of 2 and 3-way units is designed for use on plastic molding, ceramic forming, and similar equipment requiring extremely high operating pressures. Available in ½ through 2-in. NPT sizes, valves are either normally open or normally closed, with fully balanced stems (Dec 30, p139).

FLUID TRANSFER UNIT—*Vac-U-Max Sales Co, 1 Montgomery St, Belleville 9, NJ.* In portable Vac-U-Max unit, compressed air passing through jet venturi creates constant high-suction vacuum to lift and carry fluid. It fills 55-gal drum in less than 90 sec. When mounted on standard drum, flanged tube with gasket fits into smaller (¾ in.) bung; 2-in. elbow screws into larger bung and connects to suction hose. Various size adapters available (Jun 17, p190).

CONTROLLED-FLOW PUMPS—*John S Barnes Corp, Rockford, Ill.* Lowcost pump gives performance closely matching that of displacement unit. Pumps are available in flow ranges of 0-1, 0-2, 0-4, and 0-6 gpm. Applications include controlled flow for traversing table of small grinder; controlled flow for lubricating systems; and flow control in reciprocating cylinders (Aug 12, p187).

ROTARY PUMP—*Worthington Corp, Harrison, NJ.* Unit, available in sizes 1 through 4, is designed for applications requiring a lowcost, heavy-duty pump for continuous service at pressures to 500 psi in capacities to 25 gpm. Suction and discharge openings are from ½ to 1 in. NPT (Dec 2, p158).

HYDRAULIC POWER PACKS—*Huck Mfg Co, 2480 Bellevue Ave, Detroit 7, Mich.* Series 800 hydraulic power packs are designed for use with company's line of hydraulic fastener-driving tools. Model 800 handles two guns; Model 801 as many as four. Even where hose lengths of 100 ft are used, power loss at tool is negligible (Aug 26, p158).

PUMP AND MOTOR—*Tuthill Pump Co, Dept PR, 939 E 95th St, Chicago 19, Ill.* Powermite combines internal gear rotary pump, driving motor, and cooling blower in space measuring 8½ by 4¾ in. Single shaft serves all units. Furnished in production runs only, unit is available in wide variety of combinations for hydraulic, oil burning, lubrication, and other services (May 6, p194).

TEFLON NOZZLES—*Bete Fog Nozzle, Inc, 309 Wells St, Greenfield, Mass.* Spiral design TF series includes orifices from ⅛- to 2-in. dia with flow rates from 2 to 70 gpm. It is possible to obtain full-cone spray patterns, both wide-angle (120°) and narrow-angle (90°). Spiral design atomizes fluid without need for vanes or internal parts (Feb 11, p166).

AIR-LINE FILTERS—*Bellows Co, Akron 9, Ohio.* Lubri-Air Controls filter and lubricate compressed air and insure max efficiency and life of pneumatic equipment. Twin baffle plates circulate incoming air and force water and dirt particles to bottom of reservoir. Remaining particles are trapped by filter. Four port-size models are available: ⅛, ¼, ⅜, and ½ in. (Jun 2, p168).

SUMP FILTER—*Arrow Tools, Inc, 1996 S Kostner Ave, Chicago 23, Ill.* One-piece, sintered-metal hydraulic sump filter gives controlled depth of filtration, provides larger filtering area, and high flow capacity with negligible pressure drop. Filter is available in range of flow capacities in sizes from ¾ to 1½-in.-pipeline size. Price makes replacement more economical than cleaning (Jun 3, p156).

CENTRIFUGAL PUMP — *Ruthman Machinery Co, Cincinnati 2, Ohio.* Gusher Model 9025-M handles molten metals such as solder, tin, zinc and lead at temperatures to 700 F. Unit is available with either ½-hp, 1140-rpm or ¾-hp, 1725-rpm Class B motor, for capacities up to 7 gpm and heads to 8 ft (Nov 4, p203).

LIQUID METER — *Neptune Meter Co, 19 W 50th St, New York 20, NY.* Repeating Auto-Stop delivers same quantity of liquid each time valve is opened, shutting off automatically when preset quantity is reached. Pushbuttons enter quantity settings on the register. Available in 1, 1½, 2 and 3-in. sizes (Mar 25, p220).

HYDRAULIC PUMPS — *Owatonna Tool Co, 385 N Cedar St, Owatonna, Minn.* One of two new models, 6000-psi unit with a 2-hp, ac, 220/440 motor provides 220 cu in. of oil per min at zero pressure and 140 cu in. at max pressure. The other, providing same oil flow per min, is a 10,000-psi pump with a 3-hp, ac, 320/440 motor (Oct 7, p182).

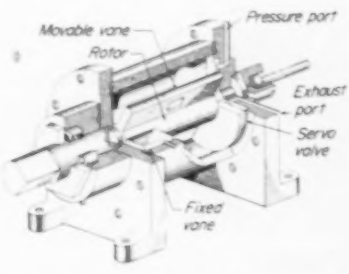
LIQUID SPRING — *Taylor Devices Inc, North Tonawanda, NY.* Model 1099 is built into a bolt, has low spring rate of 500-lb preload, 1000-lb end load, and stroke of 2½ in. Over-all dimensions are 1¼-in. OD, 12¾ in. long, with an external 1½—6 thread (Jun 17, p218).

SWING JOINTS—*Combination Pump Valve Co, 849 Preston St, Philadelphia 4, Penna.* Machine tool coolant line joints are reported to stop all leakage. They are available in two styles —in-line and angle—and in four sizes, ⅜, ½, ¾ and 1 in. Bodies are cast bronze (Dec 30, p134).

HAND PUMP—*Wayne Pump Co, Fort Wayne, Ind.* Double-action hand pump, Model DD-1, pumps 20 gal per 100 strokes of pump. It handles liquids of almost any viscosity—cutting oils, lubricating oils, grease, solvents, and many others. Unit is available in several designs to fit varied applications (Sep 9, p198).

SELF-PRIMING PUMP — *American Machine Products, Inc, 172 Centre St, New York 13, NY.* Model K ½ Special is reported to be first neoprene impeller model of ½-in. IPS designed to operate off motor as small as 1/3 hp. Made of Naval Bronze throughout, with stainless steel shaft, it handles all liquids that do not affect bronze or neoprene at 7½ gpm, 10 psi at 1750 rpm (Jul 15, p194).

ABRASIVE PUMP—*Ruthman Machinery Co, Cincinnati 2, Ohio.* Model 4072-T pump, designed for handling of abrasive materials on honing, lapping, and ultrasonic machines, consists of 1/10-hp Model 1P3 gusher centrifugal pump, tank with inlet and discharge pipe connections, electric cord and plug (Jan 14, p166).

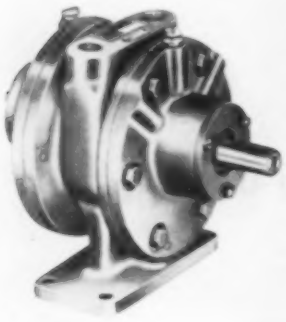


ROTARY ACTUATOR — *Industrial Control Products, Inc, 4 Clinton Rd, Caldwell Township, NJ.* Rotary actuator, with integral servo valve control, is actually a high-power, high-torque amplifier which is available in six models with output torques ranging from 7500 to 360,000 in.-lb. Torque amplification may be as high as 1500:1 (Sept 9, p188).

SPRAY NOZZLES—*Spraying Systems Co, Randolph St, Bellwood, Ill.* Hollow-jet spray nozzles, capacities from 1.5 to 110 gpm, produce spray with a 30° angle at 40-lb pressure. Furnished in pipe connection sizes from ¼ to 5 in. in brass, steel and stainless. Data sheet 7120 (Aug 12, p174).

PIPE THREAD SEAL—*Flick-Reedy Corp, Tru-O-Seal Div, 8040 N Hawthorne Ave, Melrose Park, Ill.* Tru-O-Seal has teflon ring molded into threaded locking nut. Suitable for use with oil, water, air, gas, steam, chemicals at pressures to 3000 psi and temperatures from −280 to +500 F. Available in sizes from ⅛ to 2½ in. IPS (Feb 11, p189).

VALVE—*Manco Mfg Co, Bradley, Ill.* Auto selector valve, three-part type, permits multiple hydraulic valve operation from single power source. Model AV-1 is engineered for 10,000 psi hydraulic systems; modifications for lower pressure systems are being developed (Dec 30, p120).



AIR MOTOR—*Gast Manufacturing Corp, Box 117N, Benton Harbor, Mich.* Any four-way valve built for pressures below 100 psi may be inserted in air supply line for instantly reversible motor control of Model 6 AM. Motor ports fit ⅜-in. standard pipe. Units weigh about 17 lb, are explosion-proof and vary in speed from 300 to 2000 rpm on airline pressures from 30 to 90 psi. Models with single rotation are also available (Oct 7, p189).

AIR CHILLERS—*Worthington Corp, Harrison, NJ.* Unit designed to prevent rusting and damage from water carried through tools in form of droplets can be used with pneumatic devices, presses, and stampers. Unit consists of refrigerant compressor, motor, condenser, expansion valve, and chiller. Company can design units with air-pressure drop of as little as 1 psi through chiller, thus effecting power savings (Feb 25, p212).

ROTARY COMPRESSOR — *Davey Compressor Co, 600 Franklin Ave, Kent, Ohio.* Hydrovane 5-hp tank-mounted compressor has displacement of 21 cfm, features "multi-thrust" rotor blade and contour-bored stator. Dimensions: width, 25 in.; length, 48 in.; height, 44¾ in. with horizontal tank. Vertical tank model is available (Mar 11, p178).

AIR CYLINDERS—*Burklyn Co, 3429 Glendale Blvd, Los Angeles 39, Calif.* Toolmor units give full line-pressure power thrust. Square and parallel sides simplify installation; universal mounting permits either horizontal or vertical use. Cylinders are available with standard, ball, swivel, threaded, or tool blank piston ends, in strokes beginning at ⅜ in. (May 6, p214).

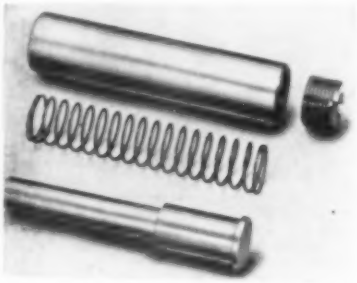
FILTER UNIT—*Watts Regulator Co, Industrial Div, Lawrence, Mass.* Filter-regulator-lubricator unit processes air supply to pneumatically operated equipment. Sizes available are ¼, ⅜, and ½ in. Filter has contoured air passage which imparts downward spiral motion to incoming air, so that foreign matter is thrown to sides and drained off (Apr 8, p200).

COMPRESSORS—*Atlas Copco Pacific Inc, Compressor Div, 930 Brittan Ave, San Carlos, Calif.* New units include 45-hp CT-4 model developing 175 cfm, and 75-hp CT-6 delivering 340 cfm. Both are two-stage, single-acting compressors which develop rated capacities at 970 rpm (Apr 22, p208).

PNEUMATIC REGULATOR—*Marotta Valve Corp, PO Box 530-68, Boonton, NJ.* RV-23 utilizes gas pressure for hand operation or three 18 to 30-v-dc solenoids for remote control operation. Unit not only eliminates cranking characteristic of existing hand loaders, but offers wider inlet and outlet pressure ranges, and can be integrated into pneumatic systems requiring programming (Dec 16, p190).

AIR COMPRESSOR — *Eclipse Air Brush Co, 390 Park Ave, Newark, NJ.* Model 303 compressor weighs 45 lb and is designed to handle small spray-painting jobs. Powered by ½-hp motor, compressor accepts Eclipse Jr-46 or G-6 spray guns with special nozzles. Price is $98 (Mar 11, p210).

CYLINDERS — *Modernair Corp, 400 Preda St, San Leandro, Calif.* Cylinders in 1½ and 4-in. bore sizes have been added to Economair series, designed for air or hydraulic service to 200 psi (Apr 8, p202).



CYLINDER—*Sahlin Engineering Co, PO Box 289, Birmingham, Mich.* Unit can be used as kicker in pressroom installations and as disappearing back gage pin. It is 3½ in. plus stroke in length, 1¼ in. in dia. and can be actuated by 30-psi airline. Strokes most frequently used are 2½, 4½, and 6 in. (Mar 25, p217).

AIR VALVE — *Automatic Valve Co, 47415, Grand River Ave, Farmington, Mich.* Pilot-operated, poppet-type air valve features aluminum construction and in-line cylinder and inlet ports which allow valve to be mounted directly on cylinder. Valve is furnished in ¼, ⅜, ½, ¾, 1, and 1¼-in. sizes, either NO or NC with continuous-duty solenoids (Jul 29, p150).

AIR - REGULATOR - FILTER - LUBRICATOR—*Perfecting Service Co, 332 Atando Ave, Charlotte 6, NC.* Unit is ready to install and requires only two connections. Regulator operates on balanced piston principle. Automatic bleed-off permits sensitive pressure reduction without bleeding downstream line. Filter cartridges are of the throwaway type. Unit is available in ¼, ⅜, ½ and ¾-in. pipe sizes (Nov 18, p218).

AIR CYLINDERS — *Densmore Engineering Co, Inc, 235 E Greenleaf St, Compton, Calif.* Air cylinders are available in strokes up to 18 ft, from 3 through 8-in. bore with a wide range of piston rod sizes. Operating pressures are 150 psi on air and 500 psi in hydraulic service (May 20, p206).

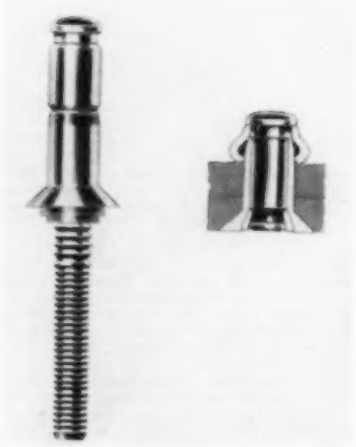
VACUUM-LIFTING DEVICE — *International Staple & Machine Co, Materials Handling Div, Herrin, Ill.* Air Lift can raise up to 200 lb. Release valve is actuated by thumb pressure (Mar 11, p190).

FIXTURE CLAMP—*Beckett-Harcum Co, 1087 Wayne Rd, Wilmington, Ohio.* Valve-N-Cylinder, used for clamping, locating, or pushing-off parts on production operations, consists of a square-rod air cylinder on which is mounted a 3-way electric valve. Valve and air cylinders may be used separately. Unit is available with 1, 1½, and 2-in. bores; 1, 2, 3, and 4-in. strokes (Oct 21, p220).

AIR FILTER—*Emco Pneumatic Corp, 1317 Locust St, Des Moines, Iowa.* Emco Jet, Model L-200-A-½ in. operates on maximum of 90 cfm and has a max working pressure of 300 psi. It prevents moisture, sludge and other substances from entering air-operated devices. Unit is designed for intermittent operation (Sep 9, p204).

VALVE—*Hauck Manufacturing Co, 124-36 Tenth St, Brooklyn 15, NY.* Adjustable port valve, designed for burners on industrial furnaces, ovens, kilns, dryers, retorts, and other control applications, provides accurate control with low operating torque of air or gas flow at pressures up to 25 psig and temperatures up to 400 F (Dec 2, p176).

AIR FILTER—*American Air Filter Co, 215 Central Ave, Louisville 8, Ky.* Multi-Pak is designed for applications that require filters of standard construction but higher than normal cleaning efficiencies. Variety of renewable media ranges from cellulose fiber sheets through dense glass fiber mats. A 2-ft by 2-ft by 22¾-in. unit contains 50 sq ft of fiber material (Jan 14, p192).



BLIND FASTENER—*Huck Mfg Co, 2480 Bellevue Ave, Detroit 7, Mich.* Rivet-type fastener of hardened alloy steel is designated the Tau Bolt, is ¼ in. in diameter, and is designed to give positive lock when used for blind applications. Collar swages into locking run and pin breaks flush with collar when device is tightened (Jul 15, p194).

THREAD SEALANT — *American Sealants Co, 103 Woodbine St, Hartford 6, Calif.* Loctite Sealant permits studs to be permanently secured without use of interference threads, and they can be sealed fluid tight. Sealant wicks into engaging threads and hardens to form tough heat and oil resistant plastic. Gripping power is proportional to engaged length. Sealant is available in four strengths (Jun 17, p190).

SPIN-LOCK NUTS—*Russell, Burdsall & Ward Bolt and Nut Co, Port Chester, NY.* Fasteners combining function of nut and lock washer in one piece are available in sizes from No. 8 to ½ in. Ratchet-like structure on base of fastener bites into bearing surface of metal to be joined, resisting any tendency to loosen (Jul 29, p143).

ANCHOR NUTS — *Kaynar Co, Box 2001, Terminal Annex, Los Angeles 54, Calif.* Self-locking anchor nuts of Kaylock line are available with thread relief in range of sizes from 8—32 through ⅝—24. Design reduces need for shims and changes in bolt-grip lengths. Nuts are approved for use at temperatures up to 550 F (Apr 8, p212).

ASSEMBLY TOOL — *Waldes Kohinoor, Inc, 47-16 Austel Pl, Long Island City 1, NY.* Tool spreads Truarc Series 5555 grip rings to the exact diameter required for installation, automatically preventing overspreading and subsequent permanent set. Known as Model GR, tool is also used to remove rings (Jun 3, p169).

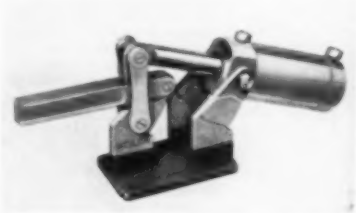
SETSCREW — *Sta-Loc Inc, 1513 Broadway, Rockford, Ill.* Self-locking socket setscrew is designed so that screw threads can be wedged without damage, preventing loosening of screw through vibration. Re-usable fastener can be loosened by wrench and reset in any desired position (Apr 8, p202).

FIXTURE KEY—*Vlier Engineering, Inc, 8900 Santa Monica Blvd, Los Angeles 46, Calif.* Device can be secured in fixture base without drilling or tapping screw hole. Lock consists of cap screw, bevel nut, and expanding lock ring. After fixture key is inserted into reamed hole and proper flats are selected, cap screw is tightened. This draws beveled nut into lock ring, expanding it against wall of hole. Lock ring locks key in hole (Feb 11, p168).

FASTENER — *United-Carr Fastener Corp, 450 Main St, Cambridge 42, Mass.* TCF thread cutting fastener, designed to hold nameplates, emblems and trim against sheet metal surfaces, can be used for applications that require a spring take-up fastener. Available to fit ⅛- and 3/16-in. studs (Mar 11, p188).

THREAD SEALANT—*American Sealants Co, 103 Woodbine St, Hartford 6, Conn.* Thread sealant kit contains five plastic squeeze bottles of Loctite sealant (AM—June 17 '57, p190), each with a dispensing nozzle, so that it can be applied right to the assembled nut or bolt. Loctite is also useful for sealing joints or porous welds in piping and process equipment against leakage (Nov 18, p214).

LOCKNUT—*Jacobson Nut Mfg Corp, Box 177, Kenilworth, NJ.* Locknut, reversible and reusable, designated Reverse-Lok, has 360° locking action. Available in steel, brass, aluminum and stainless, in wide range of standard sizes (Dec 2, p168).



TOGGLE CLAMP—*Detroit Stamping Co, Finished Products Div, Detroit, Mich.* Heavy-duty Model 858 weighs 16 lb, has over-all length (closed) of 15⅞ in., height of 7¼ in. and delivers holding pressures up to 2000 lb with normal air line pressure of 90 psi. Features include replaceable components, forged work-holding bar, air-operated clamping and upclamping, hardened bushings and pivot rods (Sep 9, p190).

LOCKNUTS—*Standard Pressed Steel Co, Jenkintown, Penna.* Steel fasteners, said to save up to 43% in weight when compared with conventional units, are available in 10—32 and ¼—28 sizes (Apr 22, p188).

RIVETS—*Hi-Shear Rivet Tool Co, 2600 W 247 St, Torrance, Calif.* Hi-Shear rivets made of titanium combine light weight with high strength for aircraft and missile applications under extreme environmental conditions. They are available in production quantities in a full range of sizes (Nov 4, p208).

CUSHION CLAMPS—*TA Mfg Corp, 4607 Alger St, Los Angeles 39, Calif.* TA1500 Series is made of stainless steel, withstands temperatures to 1500 F. Available from ¼ to 3 in. ID, units are interchangeable with standard AN, MS, or commercial cushioned loop clamps (Mar 25, p227).

NYLON SCREWS—*Gries Reproducer Corp, 400 Beechwood Ave, New Rochelle, NY.* High-strength molded nylon screws are available in machine screw sizes, lengths from ⅜ to 1 in.; headless setscrews up to 5/16-in. OD and 13/32 in. long. Threads are class 2, unified standard. Screws are produced in fully automatic molding machine, using single-cavity techniques (Sep 23, p210).

CAP NUTS—*Gries Reproducer Corp, 125 Beechwood Ave, New Rochelle, NY.* Cap nuts provide means of covering exposed bolt ends of varying lengths. Die-cast zinc alloy nuts provide up to 50% greater thread depth, and are available in hex sizes from 5/16 to ⅝ in. Class 2 threads, NC or NF, are tapped square with face and counterbored (Jul 15, p202).

LOCK WASHER—*Hi-Standard Stamping & Mfg Co, 18228 James Couzens, Detroit 35, Mich.* Hi-Lock, with barbs on both the ID and OD, combines the flat and lock washer into one. Its locking is vertical, horizontal and rotary, and it will withstand excessive vibration. Barbs are hardened to enable them to embed themselves into mated metal (Oct 7, p158).

HIGH-STRENGTH NUT—*Kaynar Co, Box 2001 Terminal Annex, Los Angeles 54, Calif.* Kaylock H 20, designed to develop the full strength of 180,000-psi high-tensile bolts, is a 12-point, self-locking nut suitable for use at temperatures up to 550 F. Nuts are available in sizes ¼-28 through ½-20 (Jul 15, p202).

STRESSED-PANEL FASTENER — *Waldes Kohinoor, Inc, 47-16 Austel Pl, Long Island City 1, NY.* QAF fastener withstands high shear and tensile loads, locks positively in less than one-half torque-free turn, and compensates for sheet separation resulting from warpage or deformation. It is available for total sheet thicknesses from 0.116 to 0.499 in. (Sep 9, p216).

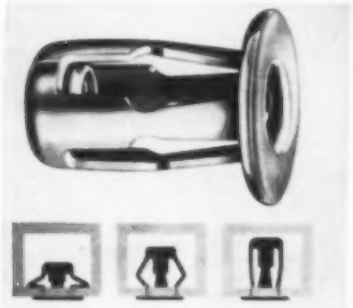
BOLTS—*Hi-Shear Rivet Tool Co, 2600 W 247 St, Torrance, Calif.* Hi-Torque bolts are available in a wide range of temperature and corrosion resistant materials including 4130, 4140, AMS-6304 alloy steels; 17-4PH, AM-350, type 431, AM-355 stainless steels, Inconel X, A-286, S-816, Haynes 25, J-1570 super alloys; 2024T4 aluminum alloy and titanium. They are available in a full range of sizes (Nov 18, p218).

CONDUIT FITTINGS BRACKET — *Ideal-Simplet Fittings, Inc, 1057 Park Ave, Sycamore, Ill.* Hub-lug fits company's rectangular fittings, and insures moisture-proof, strong mounting of fittings in electric control and operating systems on machinery. Place device over conduit, attach required fittings, tighten with Allen wrench, secure fittings to machinery through screw or bolt holes in device (Jul 29, p156).

LOCKNUT—*Jacobson Nut Mfg Corp, Box 177, Kenilworth, NJ.* Locknut with liquid lockwasher is treated with "Loctite" sealant and said to provide a high locking torque at about one-half the cost of ordinary locknuts. Units are available in steel, aluminum, and stainless in wide range of commercial sizes (Nov 18, p220).

SPRING FASTENERS—*Jacobson Nut Mfg Corp, Box 117, Kenilworth, NJ.* "Spring nuts", pre-assembled nuts and helical spring lock washers with serrations on the locking surface, are available in steel, brass, aluminum and stainless, in wide range of standard sizes (Oct 7, p189).

BLIND BOLTS—*Hi-Shear Rivet Tool Co, 2600 W 247th St, Torrance, Calif.* Titanium blind bolts for structural and repair applications consist of a core bolt, a threaded expander nut which resists installation torque and locks core bolt in place, and a sleeve that expands to fill a hole over a large range of clearances (Dec 2, p176).



FASTENERS—*Molly Corp, Reading, Penna.* Jack Nuts can be used as rivets and/or blind fasteners in expansion space as small as $\frac{3}{8}$ in. Threads grip any kind of material, from 0 to $\frac{3}{8}$ in. thick. Available in short length for thicknesses from 0 to 3/16 in., and long for thicknesses from 0 to $\frac{3}{8}$ in. (Dec 30, p134).

STEEL BOLTS — *Standard Pressed Steel Co, Jenkintown, Penna.* Hi Tm 9 fasteners, at 900F, have minimum tensile strength of 170,000 psi. First fasteners produced, designated EWB Tm9, are 12-point external wrenching type made from Vasco-Jet 1000, a 5% chromium hot-work die steel produced by Vanadium-Alloys Steel Co, Latrobe, Penna (Jul 29, p152).

INSULATED SCREW—*Pylon Co, Inc, Attleboro, Mass.* Mylar - insulated metal screw, designated Sleev-Scru, has an integral cladding of Mylar polyester film over the shank. Designed to replace screw and insulating tube assemblies, these screws provide electrical insulation between fastener and assembled parts. Screws are made to customer specifications for size and material (Nov 4, p204).

STEEL—*Kaiser Aluminum & Chemical Sales, Inc, 919 N Michigan Ave, Chicago 11, Ill.* Square steel bar and forging stock, rolled and cold finished, is now available in sizes 2¼, 2½, 2¾, 2¾, and 3 in. square. New sizes will be available in a wide range of alloys including 1100, 3003, 3052, 2014, 2017, 2024, 6061 and 7075 (Jun 17, p218).

ADHESIVES — *Compo Chemical Co, 125 Roberts Rd, Waltham 54, Mass.* Adhesives developed for bonding plastics to metals include cement for bonding semi-rigid vinyl to wide range of metal and other materials. Reportedly, these bonds can be broken only by tearing the vinyl. Primer is said to greatly improve bonds between plastisols and organosols to metals (Jun 3, p171).

VINYL ENAMEL—*Wooster Finishes Corp, Wooster, Ohio.* Coating can be applied on machinery without interrupting work schedules—it is nonflammable during application and fire-resistant when dry. Material is available in seven colors, dries to the touch in 1 hr and is dust-free in 4 hr. It comes in 1, 5 and 55-gal containers (Aug 12, p190).

EMULSIFIERS — *Olin Mathieson Chemicals Corp, Industrial Chemicals Div, Baltimore, Md.* Nonionic surface active agents trademarked Poly-Tergent, for use as emulsifiers, wetting agents and dispersants, are alkyl phenol polyglycol ethers made from petroleum-base materials. They are available in tank car lots, and in 5- and 55-gal drums (Apr 8, p212).

PROTECTIVE FILM—*Klem Chemicals, Inc, 14401 Lanson Ave, Dearborn, Mich.* Designed to condition water, protect equipment, and reclaim paint in all water-type spray booths. Compound No. 1160 forms film around paint molecules and causes them to float rather than sink. The "captured" paint can be skimmed off and reclaimed (Jan 14, p186).

THREADED PLUG STOCK — *Claude Sintz, Inc, 1928 Stanley Ave, Detroit 8, Mich.* Special alloyed and processed cast-iron material is heat-treated and stress-relieved, with tensile strength of 45,000 psi. Processed from 12-in. bar and threaded for 11-in. American NC thread, stock is made in 8 diameters. Special sizes and pitch dia can be supplied in steel, non-ferrous materials, and stainless steel (Jan 14, p186).

ADHESIVES — *Raybestos-Manhattan, Inc, Adhesives Department, Bridgeport 2, Conn.* Adhesives for bonding treated Teflon (etched surface) to itself or to any material that will bond with an adhesive include Ray-Bond R-86004, a thermosetting, two-component product, curable at room temperature; R-86024 for economical bonding of Teflon for dry applications, and R-81001 to bond assemblies subject to temperatures up to 400 F for prolonged periods (Dec 30, p138).

ALUMINUM WIRE—*Kaiser Aluminum & Chemical Sales, Inc, 1919 N Michigan Ave, Chicago 11, Ill.* Aluminum wire, flattened and with round edges, is available in thicknesses ranging from 0.020 to 0.187 in. and in widths from 0.063 to 1.000 in. Wire product is available in EC grade and in alloys 1100, 3003, 5052, and 5056 (Nov 18, p219).

REPAIR KIT — *Houghton Laboratories, Inc, Dept JT, Olean, NY.* Repair kit, No. 6C, for tools and castings consists of an aluminum-colored, epoxy-resin-base paste. Ingredients of the two tubes are mixed in equal quantities and applied to damaged part. Material cures at room temperature (Oct 7, p194).

ALUMINUM INVESTMENT CASTINGS — *Arwood Precision Casting Corp, 321 W 44 St, New York, NY.* Castings made by company's new Suparcast process show remarkably increased mechanical properties. In all areas of the casting Arwood guarantees a 34.7% increase in ultimate tensile strength, 51.5% increase in yield strength, and a 300% increase in elongation over AMS 4260 castings. For areas of the casting which are critical these values can be raised even higher (Nov 18, p191).

COLD HEADING DIE STEEL—*Latrobe Steel Co, Latrobe, Penna.* Hedervan is a water-hardening type of tool steel developed for cold heading dies, cold striking dies, embossing dies, coining dies, punches and draw dies. It is essentially a 0.90% carbon tool steel containing vanadium additives which impart improved wear resisting qualities. Material is available in rounds from ¾ to 4 in. (Dec 2, p151).

CURING AGENT—*Smooth-On Manufacturing Co, 572 Communipaw Ave, Jersey City 4, NJ.* Sonite No. 41, for epoxy potting and encapsulation of electrical components, is low viscosity liquid that mixes readily with liquid resins at room temperature, reportedly gives long pot life (Jan 14, p185).

TOOL STEEL — *Allegheny Ludlum Steel Corp, Pittsburgh 22, Penna.* Oilgraph-EZ tool steel is said to give better machinability and at same time to give a better finish. The addition of a small amount of sulfur (0.10%) is responsible for these improved properties. Applications include gages, punches, dies, spindles, shanks, drill jig bushings, and steel taps (Jun 3, p149).

HARD SURFACING MATERIAL—*Kennametal Inc, Latrobe, Penna.* Material called Kenplate is an adaptation of company's cemented tungsten carbide. It consists of small hexagonal plates of cemented tungsten carbide assembled in a continuous pattern on an adhesive glass-fiber backing to provide flexible sheets or strips for application on flat or curved surfaces (Dec 2, p150).

METALLIC IMPREGNATION SEALANT—*Imprex Division, Dept F-8-57, 2023 S 60th St, Milwaukee 19, Wis.* Material designated 909 contains the additive "I-X" which holds fallout of solids to approx 5% over a 24-hr period. Material is available in drums from 5 to 53 gal. Bulletin available (Nov 4, p204).

PLASTIC GASKET MATERIAL — *Flexrock Co, Packing Division, 3600-A Filbert St, Philadelphia 1, Penna.* Material can be coated to flange faces and gasket surfaces to reduce vacuum-line leakage and is available in two formulations, one for air, steam, water, and mild chemicals, other for gasoline, oil, and solvents (Jan 14, p186).

COATING MATERIAL—*Turco Products, Inc, Terminal Annex 2649, Los Angeles 54, Calif.* Fabrifilm protects metallic and non-metallic surfaces from abrasion, scuffing, and corrosion during processing. It is applied on receipt of raw stock, allowed to remain on the surface during storage, forming, and fabrication. Another product, Turcoat 4178, provides aluminum with corrosion-resistant coating (Oct 21, p212).

HARD-FACING ALLOY — *Wall Colmonoy Corp, 19345 John R St, Detroit 3, Mich.* Colmonoy No. 56, a nickel-base alloy containing chromium borides, provides protective hardness in the range of 50 to 55 R_c yet is machinable with carbide tools. Product melts at approx 1925 F and is said to have an unusually low coefficient of friction which is retained as wear occurs (Dec 2, p148).

SPRAY COATING—*Norton Co, Worcester 6, Mass.* Rokide coatings consist of hard, adherent, crystalline refractory oxides which protect underlying material against high temperatures and abrasions. General properties include high melting point (3600 F), extreme hardness, relative chemical inertness, resistance to corrosion, low coefficient of expansion, resistance to mild impact (May 6, p190).

TITANIUM FOIL—*Metals and Controls Corp, General Plate Div, Attleboro, Mass.* Commercially pure titanium and some titanium alloys are available rolled to foil gage and annealed. Types available include all types of commercially pure titanium rolled to min thickness of 0.001 in.; Beta alloys, type B-120 VCA, rolled to 0.002 in. min; Alpha-Beta alloys, 6AL-4V and others, to min thicknesses (depending on alloy) of 0.003 in. to 0.001 in. (Dec 2, p148).

EPOXY RESIN CEMENT — *Smooth-On Mfg Co, 572 Communipaw Ave, Jersey City 4, NJ.* Metalset A4 is an aluminum-filled compound that can be used as a smoothing and caulking compound, a patching material for metals and other materials, and as a repair cement for leaking pipes. It is packaged in two collapsible tubes. To prepare cement, equal lengths of each material are squeezed from tubes and then mixed. Tubes each hold 10½ oz. Bulk quantities available (Nov 18, p214).

REPAIR MATERIAL—*Lockrey Co, Plastics Div, Southampton, NY.* Steelpatch, a mixture of micronized steel and epoxy resin, can be used for fastening conduit, piping, shelving-brackets, insulating and other materials to concrete without special tools or drilling. It can "glue" steel and other broken machinery parts together, fill castings, or repair cracked engine blocks (Jun 17, p220).

TUBING—*Universal Tube Corp, 2133 S Kedzie Ave, Chicago 23, Ill.* Thin-wall tubing, formed and welded from high-tensile, cold-rolled alloy strip in continuous lengths to 200 ft, is offered in stainless, carbon steel, titanium, brass, bronze, and other weldable alloys. Wall thicknesses are graduated from 0.005 in. for ¼-in.-OD to 0.015 in. for 1¼-in.-OD (Apr 8, p208).

CONVERSION COATING — *Chemical Corp, Springfield, Mass.* Luster-On 52 is single-dip, no-leach type powder for zinc-plated surfaces. It gives a bluish hue, provides corrosion protection against staining, tarnishing, and white powder products (Jan 14, p186).

GERMICIDE—*F E Anderson Oil Co, Portland, Conn.* Winsor G-6 kills bacteria and eliminates unpleasant odors in water-base coolants. Literature showing field test results is available (Sep 9, p213).

PLASTISOL COATING—*Auburn Button Works, Inc, Auburn, NY.* Coating for protection of metal parts and products can be applied by simply heating parts and dipping then in plastisol. Material is chemical resistant, does not absorb moisture, is waterproof, and can be peeled off readily (Jul 15, p192).

PLASTIC MATERIAL—*General Electric Co, Chemical Development Dept, 1 Plastics Ave, Pittsfield, Mass.* Lexan has an unusual chemical composition offering a combination of toughness and heat stability. Parts made from Lexan are reportedly strong enough to withstand blows of hammer. Properties suggest its use in such applications as coil forms, appliance parts, gears, structural parts, rollers, electronic components. Material has tensile yield strength of 8000 to 9000 psi, tensile ultimate strength of 9000 to 10,500 psi, indentation hardness of R_m 70 (Apr 22, p184).

FLAT AND SHAPED WIRE—*Techalloy Co, Inc, Rahns, Penna.* A mirror finish is now available for flat and shaped wire of Monel, nickel, Inconel, Inconel X, Incoloy, Ni-O-Nel, nickel clad copper, Ni-Span C and Techalloy stainless steels. Wire is annealed and cleaned and then rolled on solid tungsten carbide rolls which have been ground to a high finish with a diamond wheel (Nov 18, p202).

DIE STEEL — *Heller Tool Co, Newcomerstown, Ohio.* Nucut die steel has surface finish of 25-35 mu-in., easy machinability, wide hardening ranges. Oil hardening type, used for toolmaking jobs, is available in 18 and 36-in. lengths, in widths from 1/64 to 14 in., as well as in variety of stock sizes. Air hardening type, for making tools used for long production runs, is furnished in 36-in. lengths in range of widths and thicknesses, including squares (Jun 17, p222).

ADHESIVE — *Flexrock Co, Packing Div, 3600-A Filbert St, Philadelphia 1, Penna.* Pressure sensitive adhesive designated Flexrock 80 bonds Teflon to Teflon, or Teflon to metal and a variety of other materials. Tests indicate a peel strength of over 1000 grams per in. or a direct pull of 12 to 15 psi for Teflon to Teflon, and Teflon to stainless steel. It can be brushed, dipped or sprayed on (Nov 4, p203).

DIP COMPOUNDS—*Metal & Thermit Corp, Rahway, NJ.* Unichrome compounds are offered in four types: 1085 gives bright, clear coating of zinc plate and is suitable for products plated in bulk; 1090 is similar to 1085, but is furnished as liquid concentrate; 1084 and liquid version, 99, are adapted to finishing cadmium-plated parts, but can be employed with zinc plating (Apr 8, p208).

LIQUID RUBBER PAINT—*Adhesive Products Corp, 1660 Boone Ave, New York 60, NY.* Apco adheres to metal, wood, plastic, and concrete. It dries in 20-30 minutes, provides protection against corrosion, moisture, acid or alkali, solvents (Jan 14, p190).

KEY STOCK—*DeVan-Johnson Co, 500 Rathbone Ave, Aurora, Ill.* Machine key stock bars are available in the 7-11 Mak-A-Key Kit containing seven bars of different sizes which may be filed to fit eleven different keyways (Apr 8, p204).

PROTECTIVE COATING — *Protex-a-Cote, Inc, 161 Delancy St, Newark 5, NJ.* Porselon may be used as an all-purpose maintenance coating where materials are exposed to corrosive fumes or spillage. It is insoluble and inconvertible in practically every solvent, agent, or reagent, including nonflammable hydraulic fluids. It can be applied by brush, spray, roller, or dip (Oct 7, p192).

PROTECTIVE COATING—*Logo Inc, 12933 S Stony Island Ave, Chicago 33, Ill.* M-241, a sprayed and baked material, is claimed to impart mirror-like brilliance when applied to vacuum metallized metals. Hardness of coating is between 7H and 9H pencil hardness. Abrasion resistance is said to be 48% better than average lacquer-type coating (May 20, p220).

INHIBITOR—*Enthone, Inc, 442 Elm St, New Haven, Conn.* Acid inhibitor No. 11 can be used on high-carbon steel without danger of etching. It is used at concentrations of about 0.2% by volume and can be added to cold or hot sulfuric or muriatic acids, or to other non-oxidizing acids. It is odorless and does not produce foam (Oct 7, p196).

CONVERSION COATINGS — *Allied Research Products, Inc, 4004-06 E Monument St, Baltimore, Md.* Chromate conversion coating Iridite 5-P produces yellow iridescent coating on zinc and cadmium plate, galvanized iron, and zinc die castings. Iridite 8-4 is liquid chromate for zinc and cadmium. Iridite 12-P provides blue-bright finish on zinc-plated parts. Iridite 14-9 provides protective treatment for aluminum (Jul 1, p146).

HARD-FACING PASTE — *Western Carbide Corp, 6840 Vineland Ave, North Hollywood, Calif.* Hi-C 60 can be applied to any metal with melting point higher than the paste, 1850 F. Material is applied by spatula, brush, or from tube. Thicknesses to ¼ in. can be hardened using gas heat, above ¼ in. induction heating is recommended. Hardness ranges from R_c 55-61 (Jul 1, p132).

PROTECTIVE COVERING — *Mystik Adhesive Products, Inc, 2635 N Kildare, Chicago 39, Ill.* Protecto-Mask guards polished metals, and is available in several grades: standard grade covers aluminum, stainless, glass, sheet plastic; black weather-resistant grade protects architectural products; fabricating grade can be drilled and cut; heavy-duty grade can also be used for sand-blast masking (Jul 1, p160).

STAINLESS STEEL SHAFTING—*Pic Design Corp, Subsidiary of Benrus Watch Co, Inc, 477 Atlantic Ave, East Rockaway, NY.* Stainless Type A-8 shafting, ground to ±0.0001 in. on diameter and finished to 10 mu-in. or better, is available in sizes from 1/32 to ½-in. diameter. Catalog 12 available (Oct 7, p192).

PLASTIC LAMINATE—*General Electric Co, Laminated Products Dept, Section PRL-2, Coshocton, Ohio.* Textolite 11572 is paper-base laminate for electronic applications using high voltage at radio frequencies. It withstands exposure to degreasing solvents, and has cold fabricating quality that eliminates dimensional changes resulting from combination of heat and punching stresses (Mar 25, p225).

ABRASIVE — *Simonds Abrasive Co, Tacony & Fraley Sts, Philadelphia 37, Penna.* Friable aluminum-oxide abrasive grain used in manufacture of SA Borolon grinding wheels is produced in single crystal form without crushing. Each abrasive particle is said to contain multiple cutting edges over entire surface, permitting greater penetration into work and faster grinding (Jul 29, p143).

TEFLON INSULATION — *Permacel Tape Corp, New Brunswick, NJ.* Material, known as 415 extruded sintered Teflon film, functions effectively in temperatures from -200 to +500 F, is resistant to practically all chemicals and solvents, and is said to have lowest coefficient of friction of any known material. Material is available in thicknesses from 0.002 to 0.040 in. (Aug 26, p170).

TITANIUM ALLOY — *Rem-Cru Titanium, Inc, Midland, Penna.* Rem-Cru C-130 AMo shows high strength at room and elevated temperatures. Alloy has nominal composition of 6½% Al and 3¾% Mo. Preliminary data show yield strength of about 100,000 psi at temperature of 1000 F. Material exhibits deep hardenability and excellent heat-treat properties (Aug 26, p154).

CARBIDE — *Firth Sterling Inc, 3113 Forbes St, Pittsburgh 30, Penna.* Firthite NHA, recommended for machining cast iron, aluminum, brass and plastics, reportedly has excellent twisting and brazing qualities. In test on piece of Dural-75-ST 12 in. long, 2 in. wide, 10 milling cuts produced 0.005 wear land (Feb 11, p159).

STAINLESS STEEL SHEET—*Chromalloy Corp, 450 Tarrytown Rd, White Plains, NY.* Stainless-steel sheet reportedly withstands operating temperatures as high as 1500 F. Production process involves diffusion of chromium into surface of steel, forming stainless surface integral with the base metal. Company reports price will be approx 49¢ per lb (Aug 26, p155).

GLASS CLOTH TAPE — *Permacel Tape Corp, New Brunswick, NJ.* Permacel 621 is high-strength, pressure-sensitive tape that is flame resistant and recommended for sealing joints in hot air ducts, exhaust pipes, etc. Available in 60-yd rolls in various widths (Feb 11, p188).

PHOSPHATING COMPOUND — *Oakite Products, Inc, 124 Rector St, New York 6, NY.* Crys-Coat LT, for use at low temperatures (120-140 F) in spray washing machines, converts surface of steel into zinc phosphate coating weighing from 150 to 300 mg per sq ft (Mar 25, p224).

PHOSPHATING COMPOUND — *Oakite Products, Inc, 124 Rector St, New York 6, NY.* Crys-Coat No. 47 cleans and phosphates iron and steel in spray washing machines. Material imparts coating of 80 to 120 mg in a brief spray application (Apr 8, p204).

PROTECTIVE COATING—*Aluminum Company of America, 1501 Alcoa Bldg, Pittsburgh 19, Penna.* Thin surface cladding for aluminum impact extrusions provides cathodic corrosion protection to facilitate finishing, or make joining easier. Technique employs company's Alclad process (Feb 25, p188).

ALUMINUM CASTING ALLOY — *North American Aviation, Inc, International Airport, Los Angeles 45, Calif.* 42B alloy has been developed for producing intricate, completely formed aircraft and missiles parts in single operation. Alloy, said to be 40% stronger than the best previous alloy, cuts time required to produce castings (May 20, p220).

THREADING AND TAPPING COMPOUND—*DoAll Co, 254 N Laurel Ave, Des Plaines, Ill.* Tapit is said to reduce risk of tap breakage by providing protective film between tap and material. Material is effective even on newer, tougher alloys, including stainless and titanium. It is available in 8-oz tubes, and 1, 2½, 5, and 10-lb containers (Jul 29, p164).

SUPER ALLOYS—*Firth Sterling Inc, 3113 Forbes St, Pittsburgh 30, Penna.* Billets, centerless ground and hot rolled bars of Waspalloy, M-308, and Rene 41 can now be ordered from Firth Sterling Inc. Ingots, weighing 500 lb, are produced by Kolcast Industries, Inc, a subsidiary of Thompson Products Inc, and are reduced by Firth Sterling (Oct 7, p168).

TAPPING OIL—*H & B Petroleum Co, 799 E 25th St, Paterson 4, NJ.* Habcool 318 contains anti-weld ingredients blended and energized to withstand extreme pressures developed when tapping and thread chasing tough alloy steels. Product is applied in small quantities by brush to tap or chaser (Jul 29, p150).

METAL CONDITIONER — *Tropical Paint Co, Cleveland 2, Ohio.* Preprimer provides corrosion protection for galvanized metal, aluminum, or sandblasted steel surfaces. Developed by Parker Rust Proof Co to take place of company's Bonderite phosphate treatment on metal surfaces that could not be Bonderized, material improves adhesion of following primer coats (Jul 29, p162).

PROTECTIVE AEROSOL — *Acme Resin Corp, 1401 Circle Ave, Forest Park, Ill.* Fluorine polymer with low-loss dielectric properties and chemical resistance to acids, alkalies, salts, and organic solvents, can be applied to any material. After desired wet coat thickness is applied, coat is fused at 480 F. Freon propellent and basic monomer is produced by Du Pont (Jul 29, p160).

SHIM STOCK—*American Silver Co, Inc 36-07 Prince St, Flushing 54, NY.* Micro-shim stock available in stainless, brass, and low-carbon steel is rolled on precision cluster mill equipment to tolerances as close as ±0.0001 in. in thicknesses below 0.006 in., and to tolerances of ±0.0002 in. in thicknesses from 0.006 to 0.010 in. It is furnished in thickness gradations down to 0.0005 in. (Dec 16, p186).

HIGH STRENGTH METAL—*Meehanite Metals Corp, 714 North Ave, New Rochelle, NY.* Material called Almanite is said to combine best properties of austenitic manganese steel and martensitic white irons. It has outstanding wear and abrasion resistance and can be readily cast in all forms and shapes. Certain types of the material have tensile strengths of 90,000 psi with ductility of about 15% (Dec 16, p167).

WAX EMULSIONS—*S C Johnson & Son, Inc, Special Industrial Products Dept, Racine, Wis.* Clear wax emulsions, No. 5003, 5009, 5015 and 5016, are used as protective coatings and dry film lubricants. They are for use over phosphated, bonderized, anodized and most other treated surfaces. They can be used as mold release agents, lubricants on steel strapping and shell cases, and as protective coatings for copper, brass and aluminum (Dec 30, p138).

WEAR RESISTANT MATERIAL — *Devcon Corp, Danvers, Mass.* Devcon WR is a wear-resistant, self-lubricating material that is used for low speed bearings, building up surfaces that are subject to extreme wear, making duplicating masters and forming dies. Tests show that it outwears cold rolled steel 60 to 1. Trial kit sells for $11.40 (Dec 16, p168).

ALUMINUM HOLLOW BAR STOCK —*Harvey Aluminum, 19200 S Western Ave, Torrance, Calif.* Material is available in alloy 2011-T3. Designed for extremely high speed operations, this alloy offers excellent machined finishes at a low rate of tool wear. It is recommended for threading, tapping and screw machine work where free-cutting aluminum is desired (Dec 16, p196).

IRON-CHROMIUM-ALUMINUM ALLOY—*Hoskins Mfg Co, 4445 Lawton Ave, Detroit 8, Mich.* Alloy 815 is said to be suited for moderately high temperature resistance heating applications and for industrial heating devices where continuous operating temperatures do not exceed 2150 F. Its high ductility makes it suitable for applications requiring considerable cold forming (Dec 16, p170).

INGOTS—*Oregon Metallurgical Corp, Albany, Ore.* Titanium and zirconium ingots and billets are available in sizes from 5 to 20-in. dia. Ingots are produced from compacted sponge, and are available as pure titanium, zirconium, or alloyed with chromium, manganese, tantalum, columbium or platinum (Jul 15, p204).

COATING COMPOUND—*Furane Plastics, Inc, 4516 Brazil St, Los Angeles 39, Calif.* Compound, applied by brush or dip, has excellent adhesion to metals and plastics and provides a resilient coating. It is prepared from epoxy resin (Epocast 19-B) and special hardener, and cures at 200 to 250 F (Jul 29, p156).

BERYLLIUM-COPPER STRIP — *American Silver Co, Inc, 36-07 Prince St, Flushing 54, NY.* Material, free from surface oxides, is offered in thicknesses down to 0.0005 in., in tolerances as close as 0.0001 in., and in widths from 3/32 to 6 in. Strip can be stamped in soft stage and then heat-hardened (Apr 22, p220).

HARD-FACING ALLOY — *Wall Colmonoy Corp, 19345 John R St, Detroit 3, Mich.* Machinable nickel-base hardfacing alloy, designated Colmonoy 56, contains chromium borides, provides protective hardness in the range of 50-55 R_c, yet is machinable with carbide tools. Material melts at approximately 1925 F and has an unusually low coefficient of friction. It can be hot-formed while in the plastic range (Oct 7, p167).

BONDABLE TEFLON—*Abbott & Biddle, 2417-X58 Federal St, Philadelphia 1, Penna.* Bondable Teflon is the product of a process which alters the surface of the Teflon to make possible permanent bonding to a variety of materials with conventional adhesives. Good bond strengths have been obtained on aluminum, mild steel, plastic, wood, and other rigid materials (Sep 23, p208).

POLYESTER RESIN—*Hooker Electrochemical Co, Durez Plastics Div, North Tonawanda, NY.* Hetron 33 is medium-viscosity, semi-rigid type polyester recommended for use where good impact strength combined with high strength is required. Material is said to be excellent for matched die molding. Laminates are strong, stiff, resist impact cracking, and are self-extinguishing (Aug 12, p190).

INDICATING PAINT — *EverLube Corp, 6940 Farmdale Ave, N Hollywood, Calif.* Tempa-Dot has been developed for application to heat treated parts that have been plated, pickled or phosphate treated, to show that part has been relieved of hydrogen embrittlement. It is red before baking and changes color after proper bake (Mar 25, p228).

GASKETING MATERIAL — *F D Farnam Co, Chicago, Ill.* Kaokork is combination of cork, fiber and rubber said to offer effective sealing of rough flange surfaces and often eliminate need for expensive machining of castings. By altering ratios of components, different compressibilities are possible (Apr 22, p217).

CORROSION PREVENTATIVE—*Allied Porcenell, Inc, 851 S Market St, Waukegan, Ill.* Profilm silicate-modified coating is designed for use where acids, alkalies, moisture or salt are source of coating failure. Spray material adheres to most surfaces. Available in colors and in both baking and air-dry grades (Mar 25, p226).

WIRE AND ROD — *Techalloy Co, Rahns, Penna.* Shaped wire and rod of Monel, Inconel, Inconel X, Nickel and Techalloy stainless, and other special heat and corrosion-resisting alloys are available as result of new combination drawing and rolling process. Variety of shapes can be specified; max dimension is ½ in.; sizes down to 0.002 in. have been made (Apr 8, p201).

SYNTHETIC ENAMEL—*Saran Protective Coatings Co, 2415 Burdette Ave, Ferndale 20, Mich.* Pliogard is a high-solids, chemical-resistant, synthetic rubber coating for protection of hydraulically operated equipment. Material is not attacked by new non-flammable hydraulic fluids, and withstands temperatures to 250 F continuously (Jun 3, p176).

TUBULAR STEEL—*Carpenter Steel Co, Alloy Tube Div, Union, NJ.* Tubular forms are now available in type 17-7PH stainless. Material is precipitation hardening type, and has high strength-to-weight ratio (May 20, p216).

KEY STOCK—*DeVan-Johnson Co, 500 Rathbone Ave, Aurora, Ill.* Cold-finished steel in square and rectangular forms is electro-galvanized for corrosion resistance and to prevent distortion of bars (Mar 25, p222).

THERMO-SETTING PLASTIC—*United Laboratories, Inc, 16801 Euclid Ave, Cleveland 12, Ohio.* Certified Metaplastic is epoxy resin used to repair dents, holes, breaks, and scratches in metal. It adheres to iron, steel, aluminum, wood, glass, and most plastics, and will bond metal to metal. It is not affected by acids, alkalis, solvents, or greases, is applied cold, and has no toxic effects (May 20, p232).

COLUMBIUM AND TANTALUM METALS—*Kennametal Inc, Latrobe, Penna.* Columbium and tantalum oxides and metals up to 99.5% purity are available on production basis. Columbium, also known as Niobium, will also be made available in technical grade, for industrial research work as well as for commercial purposes. Tantalum metal and oxide is expected to have wide application in electronic components field (Jan 14, p180).

STEEL TEST BARS—*La Salle Steel Co, 1412—150th St, Hammond, Ind.* Sample bars of "Fatigue-Proof" hot rolled or cold finished carbon or alloy barstock are available to manufacturers of parts requiring tensile strengths of 140,000 to 150,000 psi. Company studies application then sends sample bar if, in their opinion, new material will improve product (Jan 14, p163).

PROTECTIVE COVERING — *Onco Products Inc, 201 S Main St, Middletown, Ohio.* Onco is designed to protect finish of stainless steel used for curtain walls. It is adhesive backed, easily applied, and leaves no gummy residue. Material withstands temperatures to 140 F, rain, smoke, sand, and other shipping and storage hazards (Jun 3, p174).

PROTECTIVE COATINGS — *Carboline Co, 331 Thornton Ave, St Louis 19, Mo.* Carbomastic Series of epoxy-tar coatings have solids content ranging from 85 to 90%, and can be applied at thicknesses up to 10 mils per coat. Coatings show resistance to water, high relative humidity, and to most acids, salts, and alkalies (Jan 14, p182).

SINTERED IRON—*Bound Brook Oil-Less Bearing Co, Bound Brook, NJ.* Powdiron FM, said to be inexpensive and readily available, reportedly can be machined to clean, mirror-like finish comparable to mild steel. Product is said to have high ductility (Mar 11, p192).

RUST PREVENTIVE OIL—*Octagon Process, Inc, 20 Bank St, Staten Island 1, NY.* Froil offers three-way protection: moisture and vapor-proof barrier, water displacing properties and fingerprint removal. Recommended for protecting parts, dies and tools (Mar 11, p211).

EPOXY ADHESIVE—*Adhesives and Coating Div, Minnesota Mining and Mfg Co, 411 Piquette Ave, Detroit 2, Mich.* EC-1469 has high shear strength at bond temperature of 300 F, and high resistance to water and salt spray. It can be cured with or without catalyst, has service temperature range of −65 to +300 F, and is suited for honeycomb applications (Feb 25, p206).

ONE-COAT ADHESIVES—*Lord Mfg Co, Special Products Div, 1635 W 12th St, Erie, Penna.* Chemlok 220 and 201 permit simple bonding of uncured elastomers to metal. They will bond rubber, GRS, neoprene, and other like materials to such metals as steel, aluminum, copper and magnesium and to rigid plastics. Chemlok 201 used as primer will give increased bond strength (Apr 8, p178).

WELDING FLANGES—*Tech Products, Inc, 442 Mosel Ave, Staten Island 4, NY.* Pressed-steel welding flanges are available in 8 sizes from ¼ to 2 in. They are reported to weld easily and are less expensive than forged fittings. Also available in brass, copper and stainless, they can be supplied to fit the contour of user's product. Material ranges in thickness from 10 gage to 3/16 in. (Dec 2, p178).

POLYETHYLENE MOLD RELEASE —*Allied Chemical & Dye Corp, Barrett Div, 40 Rector St, New York 6, NY.* Poly-Lease 77, for use in production of plastic and rubber-molded products, is available in aerosol form. When sprayed on hot or cold mold cavities or other objects, a smooth, relatively hard film forms quickly on surface (Jul 15, p201).

EPOXY HARDENER — *Smooth-On Mfg Co, 572 Communipaw Ave, Jersey City 4, NJ.* Sonite No. 21 is an acid anhydride curing agent that gives epoxies improved heat distortion temperatures, physical and electrical properties. Material comes in powdered form in pt, qt and gal containers (Mar 25, p232).

SURFACE ACTIVE AGENTS—*Olin Mathieson Chemical Corp, Industrial Chemical Div, Baltimore 3, Md.* J Series of company's Poly-Tergent lines are effective over range from −32 to +212 F. J-200 can be used to remove oil or grease; J-300 serves as wetting agent in metal pickling; J-400 is used in pickling steel; J-500, as well as the other three agents, are used as metal cleaning compounds (Jun 17, p216).

SKIN-PROTECTIVE COATING — *Milburn Co, 2246 E Woodbridge, Detroit 7, Mich.* Ply No. 9 Gel is impervious to epoxies, amines, glass fibers, polyesters, styrene oxide, and most organic solvents. Material is not recommended against water-base irritants. It is non-irritating, non-toxic, non-absorbing, and non-drying to skin (Jul 29, p162).

ENAMEL—*Body Bros, Inc, Bedford, Ohio.* Fast-drying enamel for use on all types of machinery and equipment is called BoGard Rapid Dry, and is said to possess durability of enamel and application and drying speed of lacquer. Paint dries in 15-20 min, comes in all standard colors (May 20, p225).

ALUMINUM ALLOY—*Aluminum Co of America, 789 Alcoa Bldg, Pittsburgh 19, Penna.* High-strength alloy, X-5454, has been developed for welded aluminum structures which must operate at moderately elevated temperatures (150 to 300 F). Yield strength ranges from 17,000 psi (0 temper, annealed) to 40,000 psi, depending upon the temper. Welding characteristics are said to be excellent (Aug 26, p155).

GLASS MATERIAL—*Corning Glass Works, Corning, NY.* Pyroceram is tough, heat-resistant substance, harder than steel, lighter than aluminum, and nine times stronger than plate glass. Material starts as glass and can be formed by conventional blowing, pressing, drawing, or spinning techniques. It can be cut like metals. First commercial use will be for guided missile radomes (Jun 17, p184).

RESISTANT COATING — *Wilbur & Williams Co, 130 Lincoln St, Boston 35, Mass.* Chemical resistant coating. Rubber-Coat Liquid Hypalon, is extremely inert to almost any type of chemical attack; comes in white and bright colors. Material is easily applied by brush or spray and is effective over the range from −40 to +350 F (Sep 23, p208).

VINYL-COATED METAL—*Sun Steel Co, 1702 W 74th St, Chicago 36, Ill.* Texkote is available in 18- through 30-gage thicknesses in aluminum or steel. Adhesive is applied to metal and heated to high temperature; after cooling, liquid vinyl is applied; material is reheated and embossed. Material is available in variety of colors and textures, can be deep drawn, stamped and roll-formed without damage (Mar 25, p228).

RELEASE AGENT—*Smooth-On Manufacturing Co, 572 Communipaw Ave, Jersey City 4, NJ.* Sonite Seal-Release facilitates parting of epoxy resin castings from plaster molds, or from metal, wood, or epoxy masters. Product which seals surface pores can be rubbed, brushed, or sprayed on (Jan 14, p190).

PRESSURE-SENSITIVE TAPE — *General Tape Corp, First National Bank Bldg, St Paul 1, Minn.* No. 66 tape is transparent, uses special polyethylene-surfaced cellulosic backing, is available in rolls ½ in. wide and about 2600 in. long. Top surface of tape is resistant to acids and alkalis and is impermeable to greases, oils, and powders (Jan 14, p185).

TAPE — *Continental-Diamond Fibre Corp, Newark, Del.* Cementable Teflon tapes are available in two styles: glass-cloth supported and unsupported. CDF line of tapes bonds to almost any surface with ordinary adhesives. Produced in widths from ¼ in. to 12 in. and in thicknesses from 0.002 to 0.060 in., tapes are available with one or both surfaces treated for adhesion (May 20, p225).

SOUND DEADENER—*Philip Carey Mfg Co, Lockland, Cincinnati 15, Ohio.* No. 42 deadener has been developed for use on steel surfaces as a sound and vibration deadener and anti-corrosive coating. Non-flammable, nontoxic, non-explosive, and odorless, product can be used any place where there is a problem of metal produced noise (Dec 16, p192).

STEEL — *Latrobe Steel Co, Special Products Division, Latrobe, Penna.* New flat ground die steel, designated Select B FM oversize ground, is an air hardening steel containing 5% chromium with added sulphide particles. Steel is made 0.010 to 0.012 in. oversize and may be ground to nominal dimension after heat treatment (Dec 30, p123).

LAMINATE — *Richardson Co, 2737 Lake St, Melrose Park, Ill.* Cold punching laminate, Insurok XT-896, is said to punch clean and sharp at average room temperatures, to have low moisture absorption and low dielectric loss at high frequencies, excellent insulation resistance (Apr 8, p206).

RUBBER-TO-METAL ADHESIVE — *Raybestos-Manhattan, Inc, Adhesive Dept, Bridgeport 2, Conn.* Adhesive provides a bond so strong that rubber will tear before it can be peeled from metal. Product, designated Ray-Bond R-86001, cures in 24 hours at room temp (77 F minimum), reaches max strength after seven days. Adhesive may also be used to bond metal, glass, ceramics, or wood to metal (Nov 4, p188).

SEAMLESS STEEL TUBING—*Joseph T Ryerson & Son, Inc, Box 8000-A, Chicago 80, Ill.* Made to close ID tolerance, cold drawn product can be specified to conform to tolerances for both ID and OD. Sizes range from 2- to 9-in. OD (Mar 11, p190).

PLASTISOL FINISHES — *Auburn Button Works, Inc, Chemical Div, Auburn, NY.* Materials are sprayed on metal parts, castings, and machines. Flintlok sprays achieve 95 Durometer (C scale) and will not scratch, chip, crack or peel. Tufkote sprays provide thicker, cushiony coat in variety of textures. Finishes are available in range of colors. Test samples supplied at cost (May 20, p222).

NICKEL ALLOY — *International Nickel Co, Inc, 67 Wall St, New York 5, NY.* Incoloy T high-temperature nickel-iron-chromium alloy is produced as sheet material designed to operate at temperatures up to 1400 F and, in some applications, even higher. It is similar in composition to company's Incoloy alloy and contains, in addition, about 1% titanium (Apr 8, p170).

METAL SHAVING—*Impact Products, Inc, Box 7, Orangeville, Ohio.* Production shaving technique for shaving irregular shapes is said to make 100% shaving possible on surfaces up to ¼ in. thick. New process enables top and bottom edges to be chamfered at same time surfaces are shaved (May 20, p225).

CHEMICAL SURFACE TREATMENT —*Heintz Mfg Co, Front St & Olney Ave, Philadelphia 20, Penna.* Hinac process produces inorganic coating consisting essentially of chromium compounds which exhibit excellent resistance to corrosion and which provide a superior base for paints. In many cases, coating is superior to tinplate since it possesses greater alkalinity resistance. Processing time is only a few seconds (Jul 15, p182).

PRINTED CIRCUIT PROCESS — *Rogers Corp, Rogers, Conn.* New process is based on use of phenolic impregnated cellulose sheet material which can be cured and formed into three dimensional shapes. Hole concentration can be twice that of punched XXXP parts and can be molded at lower costs and with less difficulty. Molding allows holes to be tapered or stepped in depth. Process is licensed (Aug 12, p176).

RESHARPENING SERVICE — *Peerless Tool, Inc, 38 Peck St, North Attleboro, Mass.* Resharpening service for power hack saw blades reportedly gives new blade life even on third and fourth regrind for 1/3 the cost of new blade. Resharpened blades are now being used to cut stainless steel, titanium and other metals (Apr 8, p176).

VALVE RECLAMATION—*Lynch Engineering Co, Inc, 110 Valley Rd, Wilmington 4, Del.* Service restores valves to new-valve operating condition. Valve is disassembled, sand blasted, and necessary replacement parts are added (Feb 11, p194).

PASSIFYING PROCESS — *Logo, Inc, 12933 S Stony Island Ave, Chicago 33, Ill.* Brasslyfe process passifies and protects brass in one application. Air-dry spray material is claimed to passify brass, prevent tarnishing, and provide tough, durable coating. It can be sprayed, dipped or brushed on (May 20, p226).

DRAWING PROCESS—*LaSalle Steel Co, PO Box 6800-A, Chicago 80, Ill.* Process, named "e t d" (elevated temperature drawing), produces steel marketed under name Fatigue-Proof. Bars have tensile strength of 140,000 psi, yield strength of 125,000 psi and 30 R_c hardness. It machines about 25% faster than annealed alloy steel. Further heat treatment is often eliminated (Mar 25 p192).

JOINING PROCESS — *Intertectics, Inc, Northfield and Forbes Rds, Bedford, Ohio.* Material called InterAct makes commercially feasible the chemical joining of copper and aluminum, until now possible only by mechanical means. Material also forms a permanent chemical bond through ion exchange between such materials as magnesium, titanium, brass, zinc, silver and gold. InterAct is available in wire, powder and granular form (Nov 18, p189).

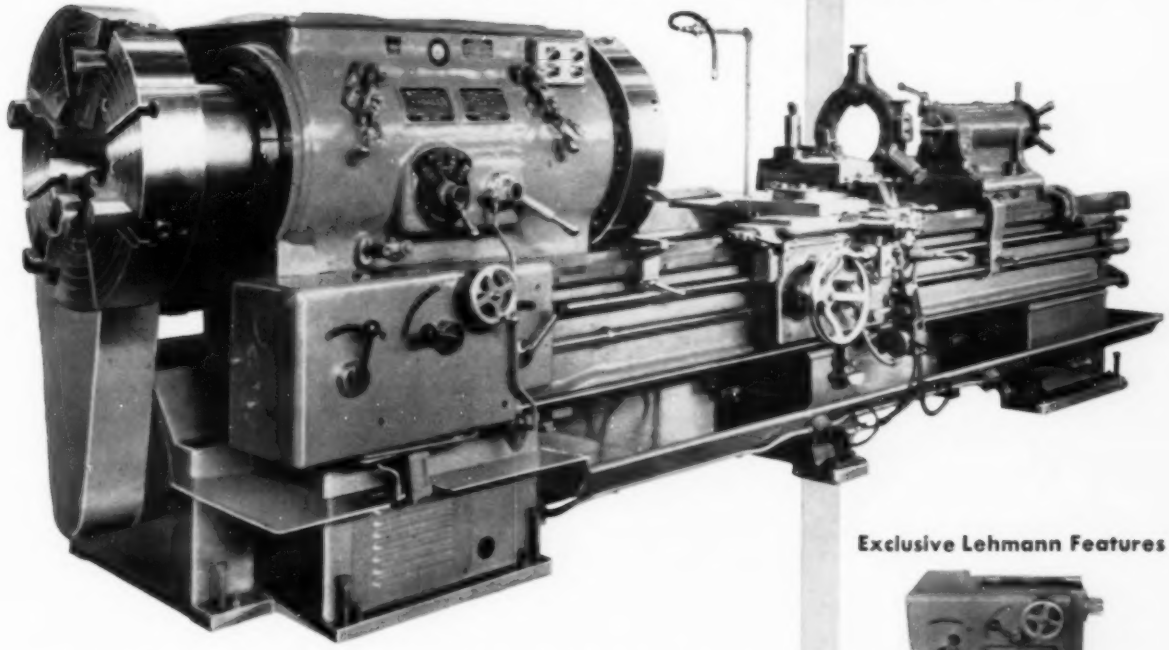
PROTECTIVE PROCESS—*Metallizing Co of America, 3520 W Carroll Ave, Chicago 24, Ill.* Borocote process for protection of steel and cast iron parts against attack by liquid aluminum uses chromium boride rods, and flame-sprays them in a new type of metal-spraying equipment, the Borocote Metallizer. Coating on surface prevents wetting of the coated steel or iron by molten aluminum (Dec 2, p166).

JOINING PROCESS—*Welded Carbide Tool Co, Inc, 62-68 Colfax Ave, Clifton, NJ.* Weldalloy process joins carbide to steel. Bonding material, also called Weldalloy, is made in two series, Weldalloy A and B. Weldalloy A is used as intermediate joining material between carbide and steel. Weldalloy B alloys are used as casing materials to reinforce carbide inserts (May 20, p198).

METAL POWDER PROCESS — *Sintercast Corp of America, Yonkers, NY.* Sinter-wrought process can produce strips, bars, rods, wires, foil and tubes from metal powders. Products have greater strength and ductility than conventional metal powder products. Metals handled by the process include aluminum, copper, nickel, cobalt, carbon steel, stainless steel, and alloys of these metals (Mar 25, p189).

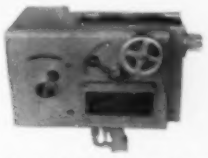
Lehmann Hollow Spindle Lathes

In Standard Sizes or Built to Specifications

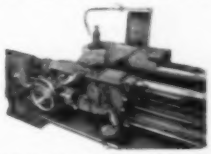


Illustrated above is a standard Lehmann 25" Hollow Spindle Lathe. Even an inexperienced operator can machine like an expert with this "automated" Lehmann. Three forward spindle speed changes in each of 4 sub-ranges within overall 12 spindle speed range of the lathe can be effected merely by moving speed selector handle on the headstock and without stopping lathe spindle or moving any manual shifter handles. Hydraulic Quick Change and Fast Threading Attachment (described below) add to the speed, ease, and economy of operation. Lehmann manufactures a complete line of Hollow Spindle Lathes with spindle holes from 3½" to 19½" diameter. Larger holes and custom-built lathes upon request.

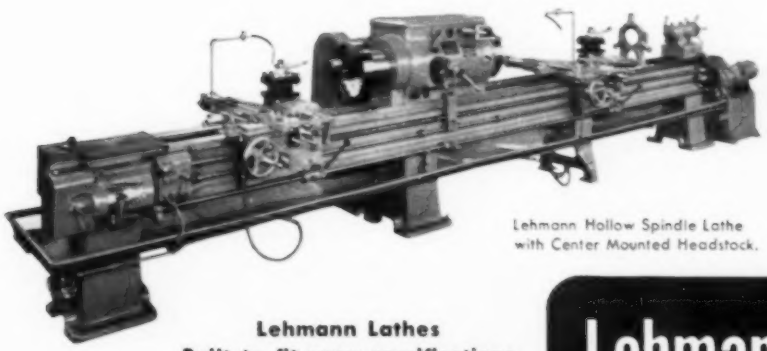
Exclusive Lehmann Features



HYDRAULIC QUICK CHANGE with synchronized index gives 54 changes of feeds and threads hydraulically and automatically. Unit fully enclosed. Anti-friction bearings for all revolving members.

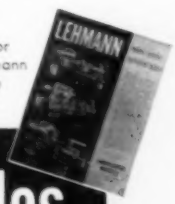


FAST THREADING ATTACHMENT reduces threading time. Safely disengages and stops tool automatically at same place, regardless of speed or closeness to shoulder. Simultaneously disengages half nuts and backs out tool on contact with automatic stop.



Lehmann Hollow Spindle Lathe with Center Mounted Headstock.

Write today for FREE new Lehmann Hollow Spindle Lathe catalog.



Lehmann Lathes Built to fit your specifications

For maximum production in your plant, Lehmann will build a hollow spindle lathe with the special features you need. Pictured is a special purpose lathe with center mounted headstock arranged for working at both ends of the workpiece simultaneously maintaining concentricity.

Lehmann · Brandes
MACHINE COMPANY
GRAND at CHOUTEAU • ST. LOUIS 3, MO.

American Machinist
REFERENCE

At Westinghouse, production men agree on economy of Wean coil processing

Mr. M. W. Stretch, right, of the Manufacturing Planning Department, and his assistant, Mr. M. Avery, discuss Wean's slitting line "after hours."

Until recently, the Electric Appliance Division plant of Westinghouse Electric at Columbus, Ohio was supplying its production lines with steel purchased in sheet form and individually resquared. Some 75 sheet sizes had to be stocked to meet varying requirements.

The installation of Wean slitting and shearing lines in August, 1957 was made after a careful cost analysis of this production process. Now, after five months operating experience, here is how production management at this Westinghouse plant summarizes the advantages of the Wean coil processing system:

Materials Savings: in addition to the initial savings realized by the purchase of coil rather than sheet, scrap is reduced by the close control and accuracy possible on Wean slitting and shearing equipment. Coil is slit in a variety of widths, from 3 to 48 inches, to supply both the shearing line and press lines, now being coil-fed.

Inventory Savings: 3 or 4 standard coil sizes now provide the production flexibility for which 75 sizes of mill-prepared sheet were previously required. In addition, prime plant space for sheet production and storage has been reduced and inventory turnover increased.

Low-Cost Versatility: differing assembly line requirements for sheet are now met quickly and easily, without production delay or the expense of special purchases.

The mechanized handling of metal possible with the Wean slitting and shearing lines also has reduced direct labor costs, freeing men for work in other production departments. And the production rate of the Wean system is more than adequate to match the plant's usage of coil and sheet: in one three-day period, 350 tons of coil were processed on the shearing line.

If you use sheet steel in quantity, it's likely that these same savings could result from your plant's use of Wean slitting and shearing equipment. One of our experienced sales engineers will be glad to explore with you the economics of processing from coil to fill your production requirements. May we hear from you?

WEAN

WEAN EQUIPMENT CORPORATION

CLEVELAND 17, OHIO

Detroit • Chicago • Newark

American Machinist REFERENCE BOOK SHEET

Calibration of Gage Blocks..I

R E ROEGER, chief engineer, CLEVELAND INSTRUMENT CO, INC, CLEVELAND 15, OHIO

When you send gage blocks out of the plant for recalibration and inspection, much time is lost enroute as compared to doing the work in your own calibration room. If you have 25 sets of blocks and calibrate them three time per year, you will save approximately $1350 as compared to commercial charges for the work. You can make these annual savings for an expenditure of slightly in excess of $2000 for the required gaging equipment and accessories. Besides, in-plant calibration increases the effective number of your gage block sets by approximately 15 to 20%. Total cost of gaging equipment required to obtain these "additional" sets is less than they cost.

Federal Specifications (Gage Blocks, Attachments and Accessories GGG-G-15, June 1, 1957*) and all authorities recommend at least the following recalibration and inspection schedule:

Grade AA—annually
Grade A—quarterly
Grade B—semi-annually or more often, depending on use. Many users have their blocks inspected every 30 days.

CALIBRATING GAGE BLOCKS

The calibration of gage blocks is essentially the comparison of the blocks to master blocks of known size under identical conditions and using suitable measuring techniques. The difference in size is indicated directly on the meter of a precision electronic comparator.

Basically, all that is required is the best high-precision equipment, a good understanding of the fundamentals of gaging practices, and an operator who will pay close attention to every detail.

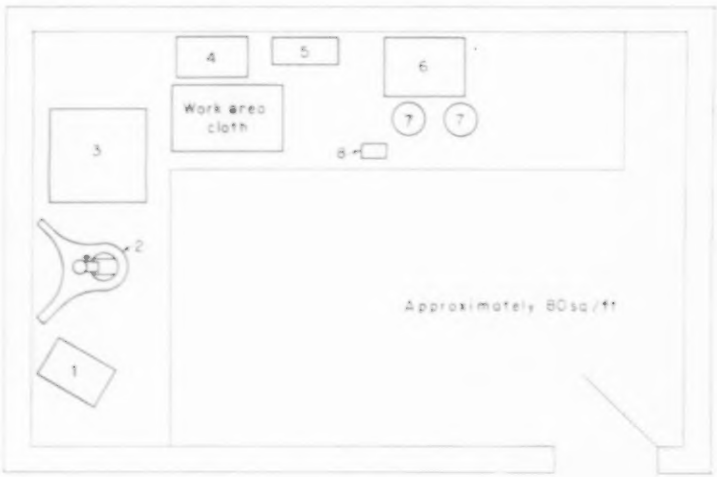
GAGE ROOM

Perhaps the greatest misconception in gage-block calibration is in regard to the need for an air-conditioned room. While this is desirable, the important fact is not constant temperature but uniform temperature. Temperature differences in the comparator stand or the test blocks and the master set are the greatest sources of error even in an air-conditioned room. A room that does not change temperature suddenly (more than 3 F per hr) is sufficient and available in almost any plant. (If gage blocks of different materials are to be checked, such as carbide and steel, the exact temperature is important because expansion factors are different and correction must be made.)

Experience has shown that it is possible to compare to an accuracy of two millionths or less per inch of block length in a properly located and planned room which is not air-conditioned to a constant temperature. The room should have at least 80 ft of floorspace and preferably no windows or outside walls. It is important that there be no drafts in the room around the gaging area. Draft shields can be easily fabricated, if needed, from plywood or plexiglass.

A large steel "soaking" plate is used to assist in bringing the uncalibrated gage blocks and master set blocks to the same temperature. To keep the blocks at this temperature, the blocks should then be handled only with large insulated tweezers or towels.

Gage Block Calibration Room



Equipment Required:
Item (See sketch for best arrangement)
1. Master set: Grade A or AA blocks with calibration chart
2. Electronic comparator (1 millionth div.)
3. Soaking plate—½ x 12 x 20-in. ground and brightly polished steel
4. Solvent tray—stainless or porcelain—with cover
5. Lint-free cloth or paper towels
6. Monochromatic light
7. Optical flats for flatness checks and burr detection
8. Deburring stone
9. Tweezers (large) with latex tips
10. Camel's hair brush

PROCEDURE

1. Clean gage blocks:

(a) Lay blocks on towel on the bottom of cleaning tray filled with solvent, preferably Varsol or trichlorethylene, but naphtha can be used.

(b) Remove blocks one at a time with insulated tweezers and

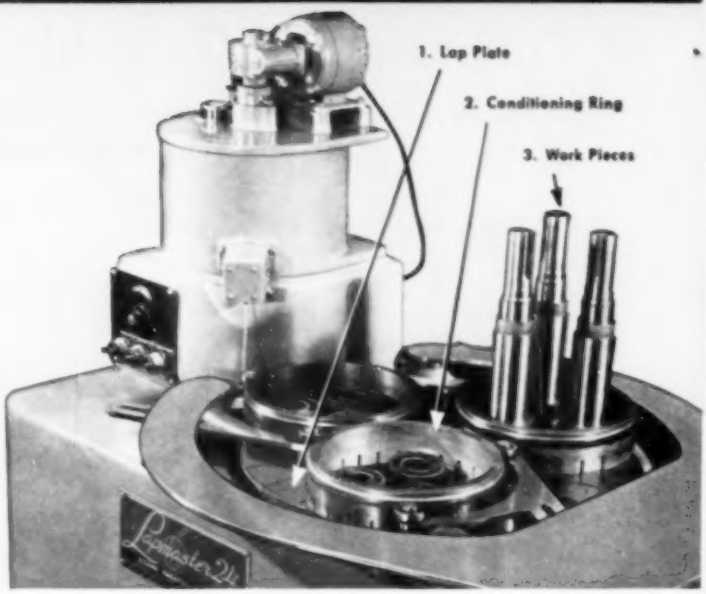
* *Obtainable from the Supt of Documents, U S Govt Printing Office, Washington 25, D. C., for 15 cents*

FACTS ABOUT HOW PRODUCTION LAPPING SAVES YOU MONEY—IMPROVES YOUR PRODUCT

With the *Lapmaster*® Principle

The Lapmaster is a versatile precision machine engineered to production *lap* flat surfaces within tolerances of .0000116" or less and microinch finishes of 2 to 3 RMS with absolute uniformity. *Here's how it works:*

1. **Heavy cast iron lap plate revolves slowly under power.**
2. **Large cast iron conditioning rings are held in position and rotate freely on the lap plate . . . continually keeping the plate flat and true.**
3. **Work pieces are placed inside the conditioning rings where they also rotate on the lap.**
4. **Fresh, sharp abrasive grains, suspended in a suitable vehicle, are continuously fed on the lap plate and uniformly distributed under the work pieces during the lapping action.**



WHY THE LAPMASTER IS TRULY A PRODUCTION MACHINE

Identical parts or parts of various shapes, heights and materials can be lapped simultaneously on one machine.

Production is not interrupted or slowed down for replacing or reconditioning lap plates.

Simplicity of design with no obstructions makes loading and unloading easy and simple.

Exclusive design and method of operation with greater effective lapping area permits more loadings per cycle.

Short, predetermined lapping cycles are automatically controlled by a timing clock for greater production efficiency.

Automatic cycling permits pre-loading additional work holders while machine is in operation.

HOW COSTS ARE CUT...PRODUCT IMPROVED

These excerpts from letters sent in by actual Lapmaster users tell the story better than our own words.

"... never been a reject from the work performed on this machine."

"... gives us better quality with less scrap and reduced labor costs."

"... maintenance costs only approximately $85.00 whereas old method was costing approximately $8000.00 per year."

"... machine will save its costs in 2 years by salvaging the mechanical seals for us which would otherwise have been discarded."

"... have dispensed altogether with tests for leakage."

"... the Lapmaster has more than paid for itself—we've eliminated a finish grinding operation and save on expensive fixturing."

HOW DOWNTIME IS ELIMINATED

The Lapmaster is the only lapping machine that does not have to be stopped for redressing or truing the lap plate. Flatness of the lap plate is continuously maintained by the patented reconditioning action of the conditioning rings.

WHAT ABOUT PART SIZE AND SHAPE?

Standard machines in the Lapmaster Line will handle parts from ⅛" up to 30½". Shape or form is not a problem . . . tall or squat, long or short, flat or odd shaped . . . all are being lapped on Lapmasters throughout industry. Monel, steel, tool steel, bronze, cast iron, stainless steel, aluminum, brass, quartz, ceramics, plastics, etc. can all be lapped with the same lap plate.

OPERATOR NEED NOT BE EXPERIENCED

Unskilled operators can be used since the only manual work required is loading and unloading the pieces.

PROVE IT TO YOURSELF WITH THE LAPMASTER TECHNICAL SERVICE

One sure way to find out if the Lapmaster can save you money is to send us samples and surface finish specifications of parts. We'll test run them in our experimental lapping laboratory and furnish you with a complete production report without obligation. Or write for FREE Booklets with complete facts on producing and measuring precision flatness and finish.

Crane Packing Co., 6436 Oakton St., Morton Grove, Ill. (Chicago Suburb).
In Canada: Crane Packing Co., Ltd., Hamilton, Ont.

John Crane

MECHANICAL PACKINGS

SHAFT SEALS

TEFLON PRODUCTS

LAPPING MACHINES

THREAD COMPOUNDS

CRANE PACKING COMPANY

Calibration of Gage Blocks..II

wipe dry with lint-free paper towel.

2. Check for burrs and flatness:

(a) Place side of uncalibrated gage block against precision optical flat and examine fringe pattern under monochromatic light.

(b) If fringe pattern consists of many lines, the block may have a burr or dust particle on its surface.

(c) Brush block with camel's hair brush to remove dust. If lines persist, deburr block on deburring stone.

(d) Determine if flatness is within tolerance limits specified for block.

(e) To check blocks smaller than 0.100000 in., wring one side to an optical flat and examine other side with a second optical flat.

SIZE CALIBRATION

1. Clean blocks (uncalibrated set and master set) as above.

2. Line up uncalibrated blocks and master blocks side by side, according to size, on soaking plate.

3. Blocks should remain on soaking plate for sufficient time to reach the same temperature as the plate. (A safe rule is 1 hr per in. of gage block length.)

4. Set up anvil and gage tip as illustrated for the type of anvil or gage blocks.

5. Using insulated tweezers, insert master gage block under comparator gage tip.

6. Adjust comparator coarse and fine adjustments until meter reads zero.

7. Set amplified centering control until meter reads deviation of master block from nominal size as given on master set calibration chart. (Uncalibrated block deviation from nominal size can then be read directly on meter).

8. Remove master block and insert uncalibrated block.

9. Note meter reading.

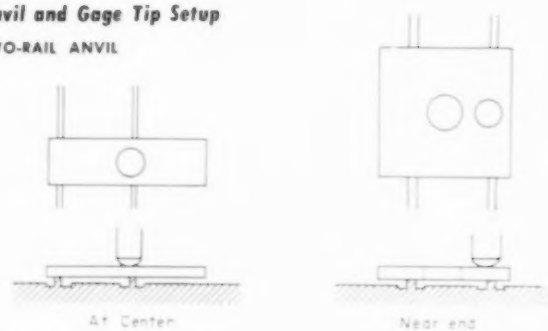
10. Repeat steps 4 through 9 two more times and record average of three readings as calibration of uncalibrated block.

11. Clean gage block case.

12. Wipe each block again and coat with rust preventative before replacing in case.

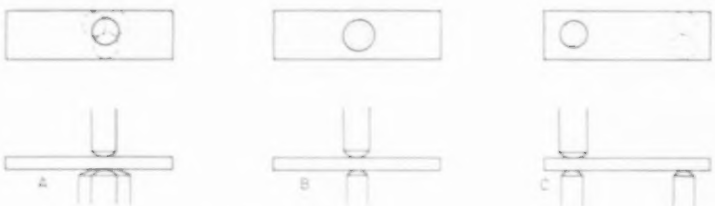
Anvil and Gage Tip Setup

TWO-RAIL ANVIL



Only one setup is required to calibrate all sizes and types of block for size and parallelism. To measure thickness, set gage tip several thousandths of an inch from inside edge of two-rail anvil

THREE-POINT ANVIL



RECTANGULAR BLOCKS:

For blocks longer than 0.100000 in., set gage tip in center of triangle formed by three closely placed anvil tips, as at *A*

For blocks shorter than 0.100000 in., set gage spindle directly over center of single anvil tip, as at *B*

For parallelism check, set gage tip several thousandths of an inch inside apex of a triangle formed by three anvil tips, as at *C*

SQUARE BLOCKS:

Same setup is used for size and parallelism checks. Set gage tip several thousandths inside apex of triangle formed by the three anvil tips

PARALLELISM CHECK

Size calibrations are made in the center of the gaging surface. However, gage blocks can wear more at the ends of the gaging surfaces. A parallelism check will reveal this condition.

1. Set the comparator gage tip and anvil as illustrated for type of anvil and gage block used.

2. Follow steps 4 through 9 of "Size Calibrations" except take readings at the edges of the gaging surfaces.

3. Record any deviation from measurements taken during size calibration as error in parallelism.

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Drawing Limit Without Pad

BERNARD K H BAO, chief engineer, R KRASBERG & SONS MFG CO, CHICAGO

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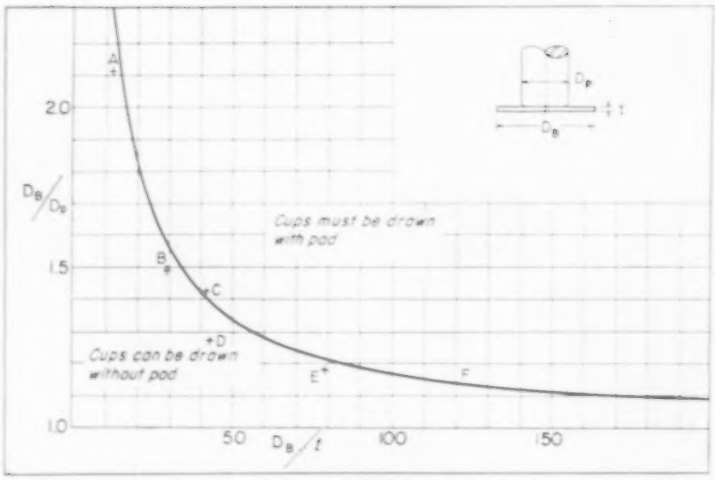
avings in progressive dies can be made if the designer can predict whether a pressure pad is needed at the cupping station. Example: dies for making boot retainers for seals. Most retainers are shallow cups with extruded driving ears at the center. Compound dies are not feasible for drawing shallow shells because the wall of the blanking punch would be too thin.

Progressive dies are a good solution if the parts must be made in one press operation. Blanks can be punched on a pad, pushed back into the strip, and carried to the cupping station. If there is no need of a draw pad, cupping is done by pushing the blank into the draw die and allowing it to drop through the shoe.

Some cups of fairly thick stock relative to blank size can be drawn without a pad if the overhanging portion is thick enough to resist wrinkling. The overhanging flange is under high compressive stresses, which act like the loading on a column that is being squeezed down plastically. If the column is long and thin, it will buckle. Similarly, relatively thin blanks will buckle.

Our problem is to find a relationship whereby we can predict the limits for drawing a cup without a pad. In the sketch, the overhanging portion is $D_B - D_p$. The ratio will be $[D_B - D_p] \div D_p$,* or $\left[\frac{D_B}{D_p} - 1\right]$. Thus, the limits of drawing a cup without pad can be represented by a curve, which is defined by $f\left(\frac{D_B}{t}, \frac{D_B}{D_p}\right)$ or a conjugate hyperbola with these two ratios as coordinates.



Plotting Data for Curve

Test	D_B/D_p	Constant	D_B/t	Constant
A	1.531/0.719	2.129	1.531/0.125	12.25
B	2.277/1.523	1.495	2.277/0.077	29.57
C	1.280/0.907	1.412	1.280/0.031	41.30
D	0.843/0.660	1.277	0.843/0.020	42.15
E	1.798/1.530	1.183	1.798/0.023	78.17
F	2.517/2.208	1.140	2.517/0.021	119.86

Tests were made to confirm the reasoning. Draw-die radii were made three times stock thickness t and punch radii were made to one stock thickness. Steel cups of different ratios of D_B / t and D_B / D_p were drawn until wrinkling started, and the constant determined. The hyperbola was now plotted. Points A, B, D and E fall in the no-pad zone. Point C produced wrinkling marks that were ironed after the cup was all the way in the die.

This curve is tentative. Persons having information on the subject are invited to supply the following information to the author at P O Box 7902, Chicago 80, Illinois:

Material of cup
Stock thickness, t
Draw die radius (3 t preferred)
Punch radius (one t preferred)
Punch dia D_p
Blank dia D_B
Appearance of cup

* *Do not confuse this expression with percentage of reduction*

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No Deadly Medicine, This

One Monday night last month as we were watching Westinghouse Studio One on television, we sat suddenly upright in our easy chair and our hackles trembled with emotion. *That man is describing perfectly the problems of the typical production man today,* we thought. The play was "No Deadly Medicine" by Arthur Hailey. Ostensibly, it was a play about doctors, but don't let that fool you. Mr Hailey's view was far more universal.

Dr Pearson heads the Pathology Department of a hospital. Now a fatal blunder has forced his resignation; a blunder caused by failure to keep up with new developments; a blunder that caused the death of a baby. Here, through courtesy of CBS Television, are Dr Pearson's (played by Lee J Cobb) final words of advice to the brilliant young man who has replaced him:

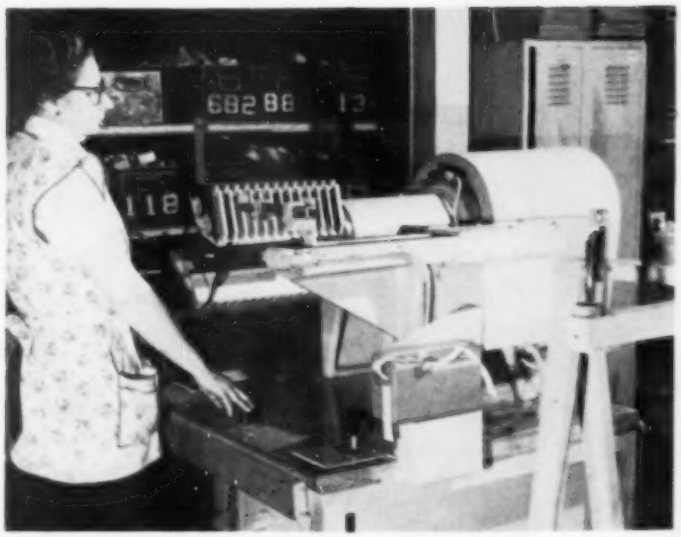
"You're young. You're full of spice and vinegar. That's good. You know your stuff, too. You're up to date. You know things that I never did, never will now. Take my advice, and try to keep it that way. It'll be tough to do, make no mistake about it. You'll sit in that chair, and the phone'll ring, and the administrator'll be talking about budgets. The next minute there'll be trouble in the lab; and you'll have to smooth that out. Then the doctors'll come in, and they'll want this bit of information, and that.

"And you'll get the salesman—the man with the unbreakable test tubes and the burner that never goes out. And when you're through seeing him, there'll be another and another and another. And then there'll be committees to go to. And at the end of the day you'll wonder what happened to it, and what you've accomplished, what you've achieved. And that's the way the next day will go, and the next, and the one after that. Until you find a year's slipped by, and another, and another. And while you're doing all this you'll send other people on courses to hear about the new things in medicine—because you can't take time out to go yourself. And you'll quit investigating and research. And because you work so hard you'll be tired at nights, and you won't feel like reading about medical things.

"And then suddenly, one day, you'll find everything you knew is out of date. And that's when it's too late to change. . . . Listen to an old man, David, who's been through it all, who made the mistake of falling behind. Don't let it happen to you. Lock yourself in a closet if you have to. Get away from the phone and the files and paper, and read and learn and listen and keep up to date. Then they can never touch you, never say, 'He's finished, all washed up, he belongs to yesterday.' Because you'll know as much as they do —and more. Because you've got the experience to go with it. . . . Well, that was quite a speech. I guess I'd better go."

—AA

Magnetized belts . . .
transfer rotor and stator blanks from underfloor conveyors to overhead conveyors. 250-ton double-blank press (left) is one of five which stamps three basic blank sizes. Three separate belts under press distribute blanks



Punched tape . . .
controls automatic-jump stator coil winding machine. Machine was developed and manufactured by GE for this facility; by automatically performing all operations, except cut-off, danger of miscounting turns is avoided

Flexible Automation Makes "Specials" as

SCHENECTADY, NY — Industry sales of motors from one horsepower up will rise from $670 million to $870 million in the next three years and well may exceed $1 billion by 1965. This is the prediction of a GE executive who should know—James M Crawford, vice-president and general manager of the company's Motor and Generator Division. His forecast, he said, was based on a "growing economy and a continuing trend toward automation."

Crawford spoke at the press showing of a new, highly mechanized factory for the production of 40 to 125 horsepower electric motors. With an investment of $5 million in machine tools and equipment plus an additional $2½-million in engineering and design, this new factory is part of the broad program under which General Electric invested $150 million in 1957. Known as "Building 81," it is a part of the Small A-C Motor & Generator Dept, which less than two years ago opened the now famous "Building 85," a $7 million factory automated for production of motors from 7½ through 40 hp. (*AM* —Apr 23 '56, p154; Dec 17 '56, p105.)

However, the nature of the market is changing. And it is indicative of the trend in a number of metalworking areas. While standardization of parts and details continues to grow, assemblies and products are becoming more and more special—to meet distinct customer requirements. Thus, when plans for this factory were started about three years ago 60% of the output was standard and 40% of orders were special. Today, according to Bryce W Wyman, general manager of the Small A-C Motor & Generator Dept, "less than one third of the motors required in the 40 to 125 hp ratings are standard; the rest are special."

Economy of Manufacture

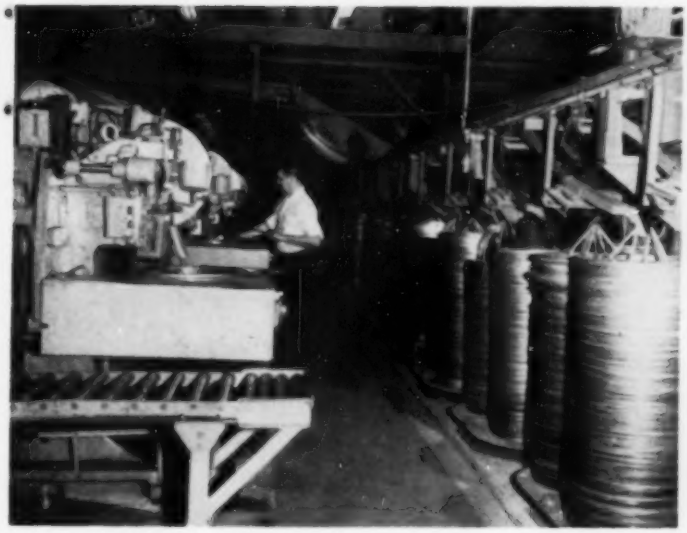
Design of the new facilities, therefore, boiled down to finding an economical answer to the manufacture of specials. This answer was a threefold one:

- Standardized parts were designed to be produced in volume and assembled in various combinations to meet a wide variety of motor requirements.
- Designing the facilities simultaneously with the product enabled the company to show economies not otherwise possible.
- Heavy investment in automatic materials handling equipment (20% of total) made it possible to realize important savings in this area.

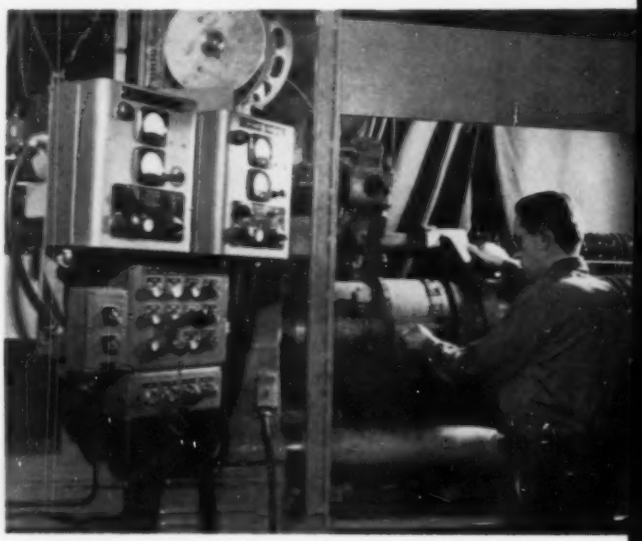
Because the plant was designed to provide for the increasing swing to specials, no serious trouble has arisen as a result of this trend. Key to the rapid production cycle (delivery of standard motors in two weeks; special or derivative motors in four to six weeks) is the flexible motor design which permits 80% of the parts for all motors, both standard and special, to be built for stock.

For instance, there are two basic shapes of coils which permit many variations in windings. There are three basic frame castings. These elements can be combined to provide the full range of sizes. Frames are No. 360, No. 400, and No. 440, weighing 500, 1000, and 1500 lb, respectively.

Present facilities are designed and selected to produce 440 units per week, which is the volume the company expects to require in 1960. Space has been provided, nevertheless, so that facilities can be added to increase production, for the 1965 market, to 640 units per week. The latter will require an estimated additional expenditure of $1¼ million.



Storage spindles . . .
Collect stator and rotor blanks prior to notching. Storage is kept at desired level as overhead angular sorter orients rotor and stator blanks to their proper spindles. For short runs, notching beats special die cost



Automatic welder . . .
places twelve evenly spaced welds on motor stator cores. Using filler-arc process, equipment welds on both forward and return strokes of the electrode. Here, operator checks weld spacing and quality

G.E. Builds for $1 Billion Motor Market

A maximum of one to two weeks' inventory at any time is considerably less than by the former method and, of itself, represents a saving.

The major part of the project was accomplished by 35 people from GE's Manufacturing Engineering under the direction of R W Tolstrup, manager, and Bert Mills, project supervisor. One year was spent in planning and engineering; two years were spent in implementing the program. Individual authorization was required for each item over $7000. Incidentally, 67% of the men on the project were graduates of GE's apprentice program and 47% held college degrees. (Yes, 21% of this group hold college degrees *and* apprentice diplomas.) Average age of these people is 40 years and they average 18 yrs with GE. Many of the same people developed both buildings.

Whereas the Bldg 85 project was started in Lynn, Mass and was transferred to Bldg 85 in Schenectady, the Bldg 81 program (actually 81 and 89) was moved from another local building to its present location.

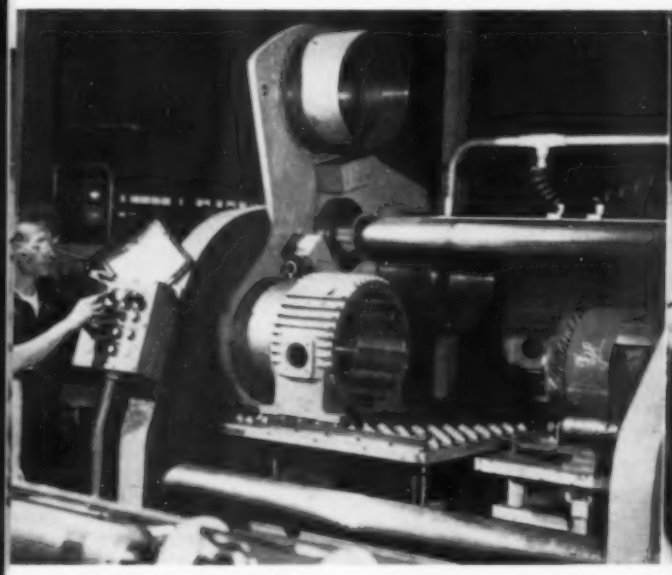
The modernization program was started at the original site and was completed to its present condition in the process of moving. At the same time, the old motor design was changed to the new Tri-Clad "55." Now, motors of the old and new designs, in frame sizes 364 through 445 are being built, in the new factory, in parallel manufacturing operations. Ratings are roughly 20 through 75 hp in Tri-Clad 44 frames and 40 through 125 hp in the new frames. The old sizes are gradually being phased out of production.

Single, Flexible Line

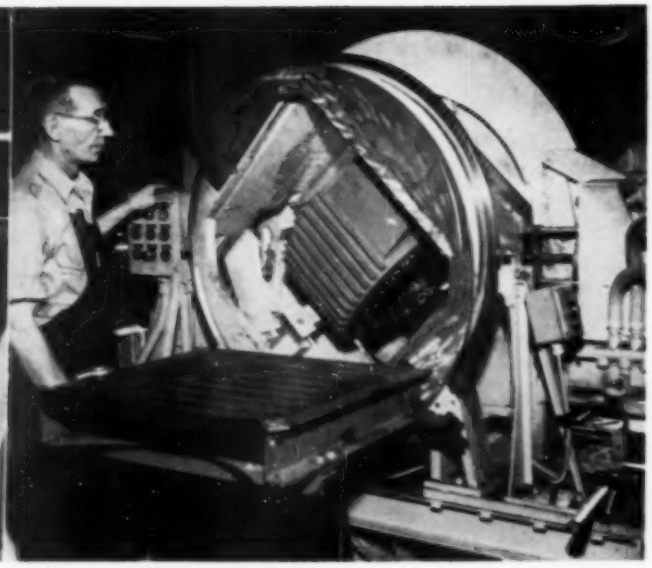
Major difference between the two manufacturing approaches is that Bldg 85 contains three distinct production lines, two for standard motors and one for the specials, while Bldg 81 has only one line which divides and rejoins to suit the nature of the operation and the mix. "Detour" lines are provided for the special operations. Bldg 81 contains no big transfer machines, single-purpose machines, or self-resetting machine tools. Here the emphasis is on automatic materials handling between general-purpose machine tools and equipment, for flexibility.

Approximately 60,000 sq ft in Bldg 89 houses equipment which performs various machining operations on motor shafts, end shields, frames, etc.

Self-feeding . . .
assembly stations provide automatic delivery of stator cores, coils, and insulation to operators. When assembler finishes one assembly, components for another one automatically shuttles into working position



Rotating spider . . .
provides choice of three back-up plates on this specially designed press which forces stator assemblies into frames under 25 tons pressure. Spider permits accommodation of all frame sizes on one press. Frames locate from feet



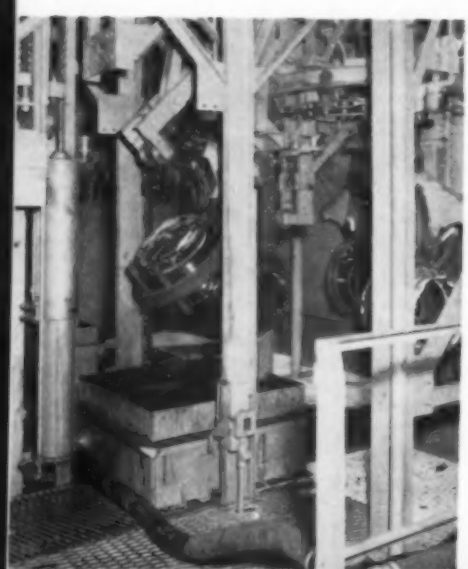
Dowel drilling machine . . .
rotates motor frame through 180 degrees to automatically position and drill dowel holes after stator has been mated to frame. All of the frame sizes from 40 to 125 hp can be drilled in this machine

From this point the parts are picked up on a conveyor and carried to Bldg 81, around Bldg 85, via an outside trestle. Upon entering Bldg 81 the conveyor travels overhead to "drop-off" points at various locations in the plant. At each desired point the required number of end shields, motor frames, shafts, etc, is picked off for assembly, predesignated in matched quantities according to the best Detroit tradition. Separating machining and assembly prevents cast-iron dust from entering motors.

Typical of the machining operation, in the old method the frame was processed through seven machine tools. Today, the smallest frame (360) is done on three machines, two of which are new multi-operation machines.

At the front of Bldg 81 large presses stamp out rotor and stator blanks from sheet steel automatically fed from five-ton rolls. These "donuts" drop from the press to one of three conveyor belts which carries them to individual 90-ton separating presses. After separation, parts travel under the floor to a vertical magnetic belt which lifts them to an overhead belt. The latter carries the rotor and stator blanks through a sorting device where they are collected on pins fixed to a rotary table. Then stacks of blanks are removed from the pins, as needed, and carried to one of two notching presses. After notching and coating, rotors and stators are stacked and welded into cores.

When welding is complete, cores are batch annealed. Three separate chambers are contained within the 110-ft length of the annealing oven:



Rise-and-fall tank . . .
automatically gives six successive "dips and bakes" to insulate stator assemblies. As stator assembly hangs from overhead conveyor, tank rises to provide dip then is lowered for baking cycle in oven behind each tank

preheat, anneal, and cool. All are zone controlled to help maintain maximum magnetic properties. Control settings are automatically adjusted as each batch enters the oven and travels through the three sections. The oven's duty cycle can be set for any production level.

Preliminary core-loss tests follow annealing and then the stator cores are automatically loaded into a newly developed machine which turns their outside diameters to finished dimensions. Rotor cores are "Parkerized" and then aluminum windings are centrifugally cast to them.

After coil insertion and insulation via six dip-and-bake operations, stators are pressed with a force of 25 tons into the waiting frame. Then final assembly consists of vertically positioning the rotor assembly into the stator and frame assembly. Vertical assembly minimizes bearing noise, in the operating motor, and improves part handling. Finished motors are shunted to test areas where they undergo resistance, impedance, hi-potential, surge, and sonic tests on a testing machine.

Integrated data processing equipment is used in Engineering for parts lists and production order origination, as well as in order service for transmission to all factory points, scheduling, and subsequent shipping and billing operations.

Adoption of US Methods Sparks Boom in European Auto Output

DETROIT — The remarkable prosperity of European automotive plants, the impressive modernization of these plants, and the originality shown in the design of European machine tools were emphasized by a panel reporting to the annual meeting of the Society of Automotive Engineers, held here January 13 to 17. The members of the panel had all made recent trips to Europe to study methods there.

1000-2000 Cars a Day

Production rates of 1000 to 2000 cars per day have now been achieved by several companies. Many suppliers have much higher rates. One company in England produces 7000 starters, 7000 generators, and 50,000 lamp assemblies per day. There is an acute labor shortage in most European countries, so that companies with large production rates are beginning to think more in terms of automated operations. This trend is aided by the tendency to change models less frequently than in the U S—usually every three to four years.

The increasing adoption of U S methods has been encouraged, not only by this development and steadily increasing volume, but by extensive visits to U S plants made by European production managers.

Coordination between engineering and production is achieved by the general practice of having engineers work in production for two years before starting into design work.

Several noteworthy European developments have been made in the automatic cycling of forging operations. Among these are the GFM machine, for forging tapered and stepped parts with a machine in which the amount of die closing is controlled by a mechanically programmed cylinder. Another development is the MOCA forging machine, which has vertical die movements instead of the conventional horizontal movements found in U S machines. This is reported to make possible much higher die pressures, permitting coining in the final stages of forging.

Beefed-Up European Machines

European machines have been beefed up until they are fully equivalent to U S machines, except that they have not gone in for hardened ways and other abuse-proofing devices. It was felt by some of the panelists that more originality is found in European machine tool designs. And more attention has been given to precise measurements on the machines, with optics applied more extensively, than in the U S.

At the same time, machines of comparable size and rigidity now cost as much or more as U S machines, and delivery times are somewhat longer.

Chairman of the panel was G R Fitzgerald, AC Spark Plug. The members were Harold Johnson, GM Overseas Operations; S K Rudorf, A O Smith Corp; Paul Miller, Ford Motor Co; and Emil Gibian, Thompson Products.

Predict 29% More Aluminum In Cars This Year Than in '57

DETROIT—Aluminum usage in 1958 passenger cars will be 29% above last year according to the third annual survey made by Aluminum Co of America. The average is 52.4 lb per car, compared with 40 lb in 1957. If 5.5-million cars are produced this year, the total aluminum consumption will be 144,000 tons.

Average use of aluminum per car has risen from 5 lb in 1939, to 12 lb in 1948, to 29.6 lb in 1955. Largest increase this year is in trim applications, but the bulk of the aluminum is still going into transmissions. The average Chrysler car uses 75 lb, the average Ford car 52 lb, and the average GM car 44 lb. Highest single car application is the Cadillac Brougham with 305 lb per car.

Engines Next?

As for the last several years, all of the aluminum companies feel that they are on the verge of a breakthrough into aluminum use in the engine similar to the one that has been made in transmissions. Practically all cars today use aluminum in automatic transmissions.

Niobium Easier To Forge Than Moly?

DETROIT—Niobium seems easier to forge into useful shapes than molybdenum, W S Hazelton of Westinghouse told the SAE annual meeting here January 13-17. Mr Hazelton reported on limited experience in fabricating niobium (formerly columbium) in comparative terms with molybdenum—because niobium is being considered as a substitute for molybdenum in jet engines for operation at ultrasonic speeds.

Extensive ores of niobium have recently been discovered. Though price is now 10 times that of molybdenum, this differential is expected to disappear in the next few years.

In forging niobium, close control of temperature and amounts of reduction are required, though there may be less difficulty than with molybdenum. Moly requires close control of residual cold work to give required strength and ductility. The first niobium alloys will probably also require strain hardening, but the higher ductility of niobium permits most rolling operations to be performed at or near room temperature.

Niobium seems to be readily formed by normal techniques, and it may not be necessary to heat the blanks as with molybdenum.

Joining is a more serious problem. Inert-gas-shielded arc welding will cause the weld metal to pick up gaseous impurities. These can seriously embrittle both molybdenum and niobium. The problem does not seem as serious with niobium, but many problems remain unsolved.

The interest in niobium comes from the fact that its 4475 F melting point is attractive, it is relatively light, and it has a low modulus that will permit alloying without serious loss of ductility. The prospects are considered good for a strong, oxidation resistant alloy of niobium.

Oxidation is a severe problem with molybdenum. One of the more successful applications has been an Inconel-clad moly sheet stretch-formed into engine vanes and resistance welded on the trailing edge. Niobium provides a less serious problem because the oxide is not volatile and minute imperfections in the coating are less likely to cause failure.

NEWS REPORT...

The New Budget:
Procurement Shifts to Missiles, R & D

WASHINGTON — The administration's new defense budget—the largest ever in peacetime—calls for a continuing high level of production from metalworking industries (see tables). But it speeds the shift in the makeup of the military product mix:

- Manned aircraft production — in terms of shipments, new orders, and new appropriations—is falling sharply.
- Development and production of long-range ballistic missiles is accelerated. So is work on ballistic missile detection and defense systems and missile-armed atomic submarine construction.
- Development of outer space space projects—reconnaissance satellites, rocket engines, and the like—is being pushed faster. At the same time, basic research efforts are intensifying.
- Production of the so-called "conventional" weapons — combat vehicles, ammunition, small arms, and such—is slowed down some more. But for the first time in five years, the Army gets new funds ($1.4 billion) for hardware output. All this time, the Army has lived on unspent Korean War appropriations.
- Procurement of production equipment and facilities is dropping to the lowest level since pre-Korea.

Overall Defense Dept spending for fiscal 1959, starting next July 1, is pegged at $39.8 billion—$900 million over the current volume of expenditures.

But many defense experts think expenditures will rise even more.

Budget Lacks "Urgency"?

Still, the military professionals are roundly denouncing the new budget for "failing to reflect a sense of urgency." The reference to "urgency" has become a rallying-cry in post-Sputnik Washington for critics of the administration's defense policy.

The military pros, of course, are thinking in terms of the Rockefeller and Gaither Committee proposals. Both Committees reported grim conclusions about expanding Soviet military might and made detailed recommendations for greatly increased defense expenditures.

The Rockefeller Report saw the need for annual hikes of about $3 billion until at least 1965—the bulk of it earmarked for production of both new and conventional military hardware. This would put military outlays at about $45 billion as early as fiscal 1960, at least $5 billion over the current level. The Gaither Committee reportedly seeks a boost of $8 billion over this period.

Too Little, Too Late?

The military brass are arguing that this year's defense spending boost amounts to less than 3%—about the amount defense costs have risen in the past few years just as a matter of inflation. They claim the new increase will again be consumed by the rising cost level and will not buy any more defense.

They also stress that while total spending for missiles — including production and procurement, research and development, guided missile ship construction, and missile-related construction—will rise from $4.3 billion this year to $5.3 billion, last year's major cutbacks and stretchouts in weapon production have not been reinstated.

Indeed, the total value of military hardware deliveries is scheduled to drop from $13.8 billion to $13.7 billion next year — despite the big boosts for missiles.

Under the new hardware production plans, military procurement officials see these trends:

- The makeup of the military production industries will continue to shift as procurement of conventional equipment—particularly in land vehicles and ordnance—remains at a low level, and buying of the new weapons and automated equipment steps up. Producers who do not diversify into the new areas will drop out of the arms business.

(continued on page 280)

Where new US military buying goes
(millions of dollars)

	Expenditures (shipments)		Appropriations & pending requests	New appropriation request
	Fiscal '58	Fiscal '59	Fiscal '58	Fiscal '59
Total major procurement and production	**$13800**	**$13700**	**$11400**	**$13400**
Aircraft	7500	6900	5800	5900
Missiles	2900	3300	2300	3800
Ships	1100	1300	1800	1300
Combat vehicles	137	103	0	85
Support vehicles	129	169	39	249
Artillery	0	13	0	10
Weapons	15	5	2	16
Ammunition	321	224	114	253
Electronics, communications	839	864	703	1000
Production equipment and facilities	550	368	332	259
Other	306	494	391	448
Research & development	1800	2000	1800	2300
TOTAL	**38900**	**39800**	**36600**	**39100**

Air Force will be top Service spender
(millions of dollars)

	Expenditures (shipments)		Appropriations & pending requests	New appropriation request
	Fiscal '58	Fiscal '59	Fiscal '58	Fiscal '59
Army	$ 1400	$ 1300	$ 0	$ 1400
Navy	3900	4100	4000	4000
Air Force	8500	8300	7400	8000
TOTAL	**13800**	**13700**	**11400**	**13400**

now it's 13 S&F gear testers at Eclipse-Pioneer

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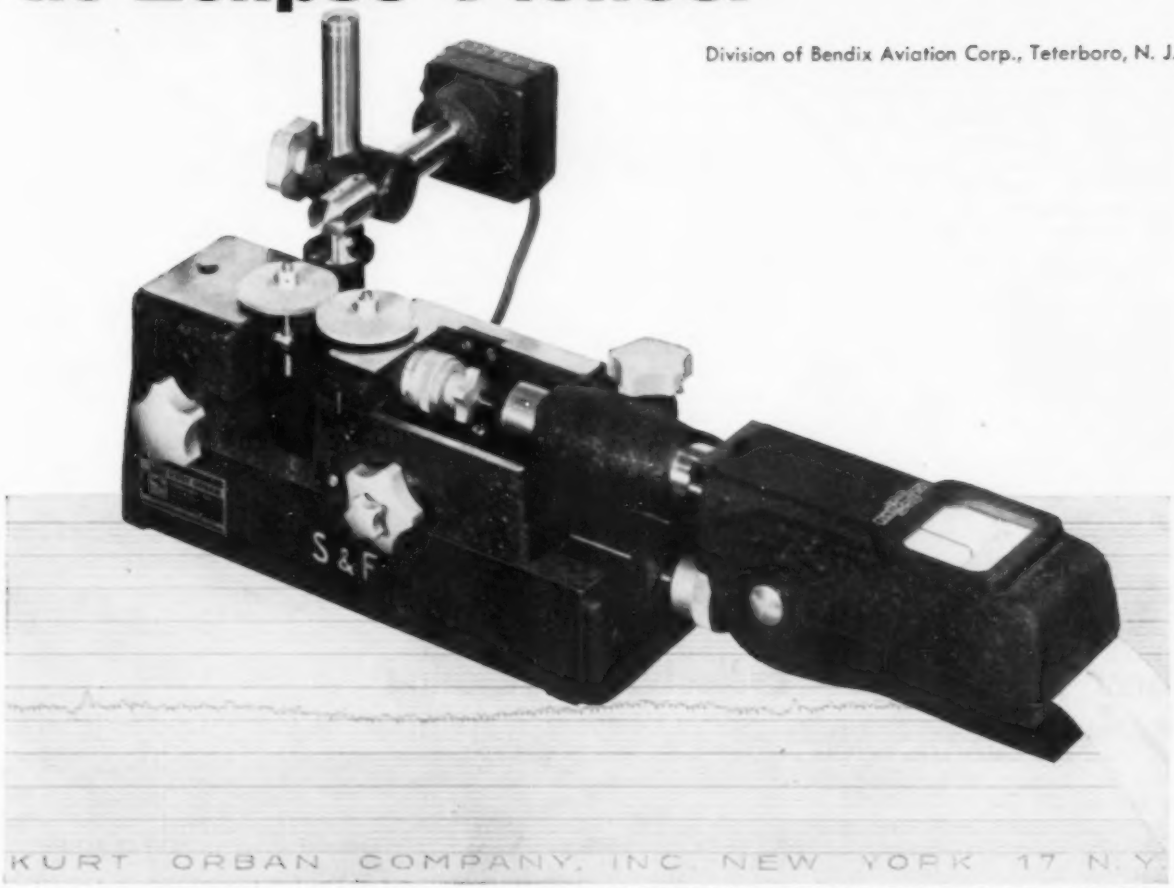

Graphotest record of gear checking at Eclipse-Pioneer illustrates sensitivity of S & F Testers.

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That's why Eclipse-Pioneer recently added three new S & F testers—now has a total of 13 in active operation.

And that's why scores of other plants are changing over to the S & F—to make sure that the gears they make—or buy—are as accurate as they're supposed to be.

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NEWS REPORT...

BUDGET (continued)

• The stress on placing production contracts with developers of new equipment will continue. There will still be exceptions, however, in cases where the developing firm lacks production capacity and volume output of the new item is wanted quickly.

• As many big prime contractors are edged out of military production —notably in manned aircraft—the companies will push into component manufacture normally handled by smaller subcontractors. The net result: an even tighter squeeze on the small subs for military business.

• The military services will continue to provide production equipment and facilities. But construction of new plants will be held down as much as possible—as an economy measure and as a means of using facilities idled by changes in production.

Here are details on new hardware procurement contracts to be awarded in fiscal 1959:

• The Army will place $1.6 billion in new orders for major equipment, ammunition, missiles, and the like. This year's volume amounts to $1.5 billion.

• The Army is incensed that this amount will not provide for as wide-scale modernization of arms and equipment as it would like for its new "pentomic" divisions.

Navy Missile Money Up

• New orders for the Navy will total $1.8 billion for aircraft, compared to $1.9 billion this year; $37 million for ground electronic and detection gear, compared to $32.3 million; $270 million for missiles and drones, compared to $264.6 million; $1.5 billion for shipbuilding, the same as this year; and $488 million for ordnance and ammunition, compared to $315 million this year.

Included in the shipbuilding figure is $72,000 earmarked for "reserve tools and facilities." The Navy has $435,000 set aside for this purpose in the current year.

The Air Force plans to award $4.9-billion worth of new orders for planes in fiscal 1959, $1 billion under the current volume of contracts; $1.7 billion for missiles, compared to $1.5 billion this year; $705.7 million for ground communications and electronics, compared to $431.5 million; and $1.4 million for airborne electronics and communications, compared to $23.3 million this year.

The Air Force's production plans include funds for volume output of Convair's B-58 supersonic medium-range bomber, but no new production money for Boeing B-52 production and the atomic aircraft project. B-52 production is now scheduled to be phased out in about 18 months, when production of 603 aircraft is completed. The A-plane project will continue in low gear, financed with research money for the most part.

The administration's new budget includes an unprecedented request for Pentagon authority to transfer up to $2 billion in funds from one service to another—that is, funds appropriated by Congress, say, for Navy aircraft production could be shifted by the Defense Secretary on his own initiative to Air Force missile output.

Gear Train Analyzer Evaluates Lost Motion

BROOKLYN, N Y—Lost motion in precision gear trains, such as those in guided missiles, servo units, computers and the like, can now be evaluated quickly and accurately by a new gear train analyzer.

In essence, the machine works this way: A torque actuator is substituted for the motor drive of the gear train under test. A dial on the control unit regulates the voltage to the actuator, then a read-out dial on the actuator shows the inspector the precise angular displacement of the actuator shaft. In this way, total lost motion is measured by applying constant torque to the input pinion of the locked gear train, and by reading the clockwise and counter-clockwise displacement of the actuator shaft. The instrument is particularly adaptable to high ratio gear trains that have small input torques.

The Daco analyzer has other functions, too. For instance, it can be used to measure the torque needed to drive free-running gear boxes, helps adjust gear meshes and bearing alignments during assembly, provides a means of setting gear train safety clutches and of testing gear trains.

How the gear train analyzer works . . .
Torque actuator (A) with a read-out dial (B), calibrated in degrees to indicate angular displacement of the actuator shaft during test of locked gear train, is connected to electronic control console (C). Analyzer's maker, Daco Instrument Co, Brooklyn, also supplies torque motors from 2 oz down to 10 gram-in. input. The 52-lb unit operates on 115 volts, 60 cycles

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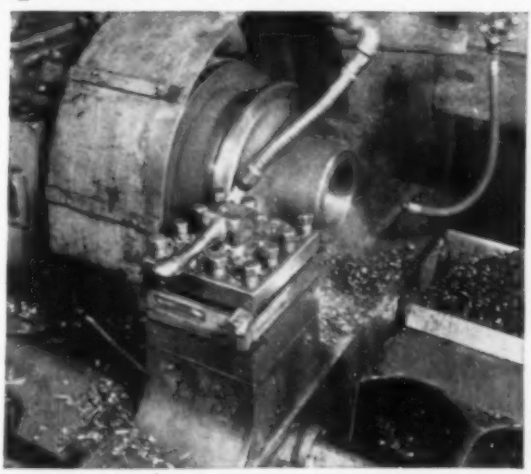

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NEWS REPORT...

"Bracket Approach" instead of Bulletin F?

Urge Realistic Depreciation Policy

WASHINGTON—Today, tax depreciation policies are "discouraging investment in industrial facilities and slowing down the national economy," Joel Barlow, chairman of the U S Chamber of Commerce's Committee on Taxation and member of the law firm of Covington and Burling, told the House Ways & Means Committee January 13.

Speaking for the Chamber of Commerce, he offered a more realistic depreciation policy, the "bracket approach," to replace the controversial "Bulletin F." The latter came in for some particularly sharp criticism from Mr Barlow, who characterized it as an "unwise depreciation policy" that has twice had to be corrected by Congress since 1940 "so as to get the deadly obsolescence out of the nation's industrial plant for vital war production." Bulletin F, he said, is based on historical-use patterns of the depression-ridden 1930s and the war years of the early 1940s. In the former, companies could not replace because of lack of funds, in the 40s they couldn't do so because new facilities weren't generally available during the war.

The law, Mr Barlow said, provides a reasonable allowance for wear and tear and obsolescence, but the burden of proof imposed by the 1934 Treasury ruling has almost completely nullified the allowance for obsolescence. "The burden of proof is impossible. Obsolescence cannot be proved, it can only be predicted. And Revenue agents do not let the taxpayers depart from Bulletin F or the historical pattern of the 1930s and 1940s by gazing, no matter how intelligently, into the crystal ball of prophecy."

Result is, he went on, that taxpayers' reserves for replacement are inadequate, they must operate with high-cost obsolete facilities, and, caught in a squeeze between high tax rates and unreasonably low depreciation rates, they can't afford to buy new facilities.

"The result," Mr Barlow said, "is a vicious circle of higher costs, lower profits, less replacement, and a continual drying-up of revenues for the government."

And while new depreciation methods—double declining balance and sum-of-the-digits—enacted in the 1954 Code, help somewhat, they don't solve the problem because they are still tied to Bulletin F.

Not only that, Revenue agents seem to have the idea that capital gains made on disposition of facilities call for extension of useful lives and carving out of a high salvage value to insure that investment won't be fully recouped.

The Chamber of Commerce recommends getting rid of this problem by eliminating capital gains treatment for facility retirements by establishing rates that take depreciation fully into account.

Toughest nut to crack is changing Bulletin F's "physical life and burden of proof" concepts, which are employed without regard to obsolescence referred to in regulations.

Uneven Taxpayer Treatment

"The disparity of treatment of taxpayers is unbelievable," Mr Barlow told the Congressmen, "It is not at all unusual for the Revenue Service to take the position that two competitors in the same industry, making the same product on the same type of facilities, must use different depreciation rates simply because of abnormal depreciation patterns established in the 1930s and 1940s. Competitor A may be allowed a 15-year life, while Competitor B is forced to use a 30-year life."

Other Nations More Realistic

The U S is the only leading industrial nation that adheres to such archaic policies, Mr Barlow continued. Realistic depreciation policies in other countries encourage replacement and expansion. Instead of writing off machine tools in 15 to 33 years as in the U S, taxpayers in Canada, Germany, Sweden and Great Britain can write them off in less than 10 years, sometimes in one to five years.

The result in the U S is a shortage of capital expansion money—a pinch felt especially by the smaller companies, which, because of unwise replacement and depreciation policies, are high-cost producers unable to compete effectively with bigger firms. Because they can't establish reserves after taxes, many of them are forced to merge.

Too, the U S is losing many of its export markets because of unwise depreciation policies, Mr Barlow said. "With labor rates in this country more than two and three times as high as those abroad, our only hope of competing in world markets depends upon the design and installation of more automatic, efficient, low-cost machines."

Not only that, U S manufacturers are beginning to lose their domestic market for the same reason, with low-cost autos, machinery and other products coming in in ever-increasing volume. U S manufacturers have been forced to move abroad to take advantage of low foreign labor rates —and the more realistic tax depreciation policies of foreign countries.

And this same shortsighted tax policy is discouraging private ownership, Mr Barlow continued, with the result that companies today would rather lease than buy facilities because the rental is deductible and they can recoup their costs currently to minimize inflation.

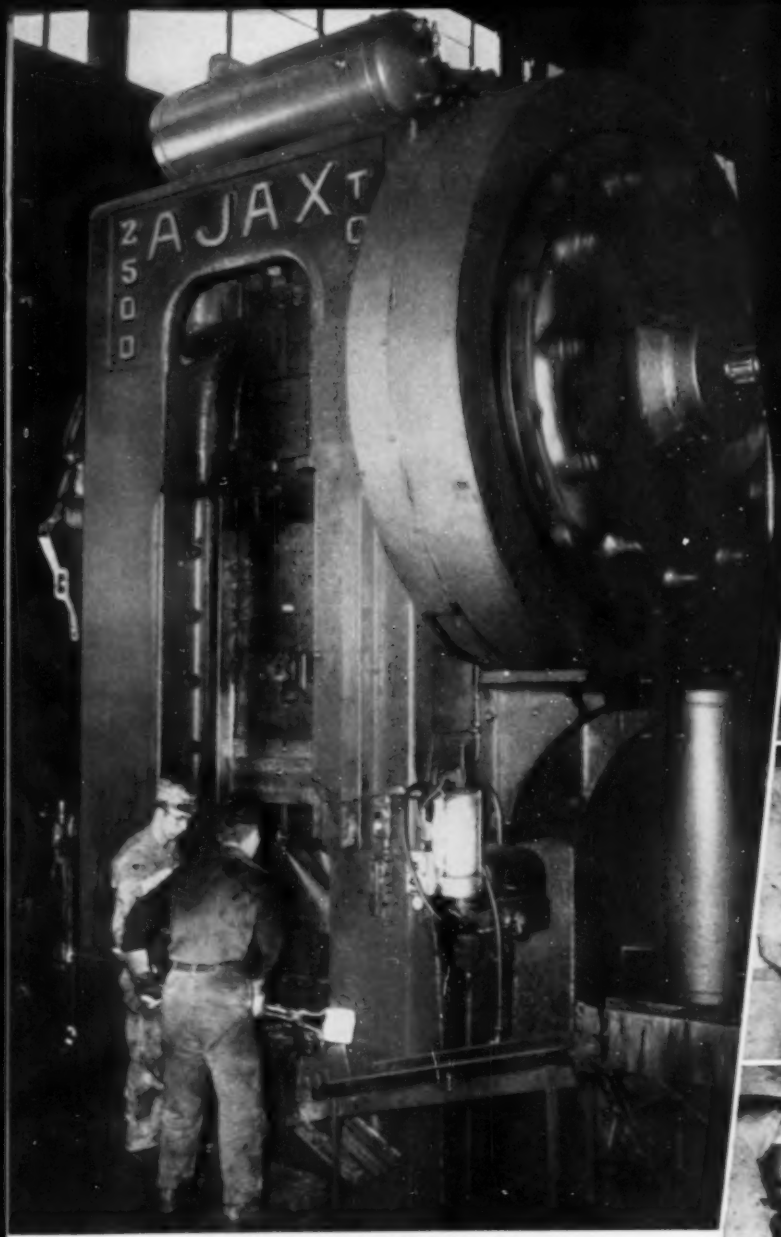
What can be done about it? For one thing, the Chamber of Commerce recommends, get rid of Bulletin F, and issue new, more realistic regulations. By that it means the "bracket method."

Under this method, depreciable assets would be classified into no more than 10 or 15 general categories. For each, brackets of maximum and minimum useful lives would be given, allowing the taxpayer to choose any useful life within the bracket without challenge from the Internal Revenue Service. If a taxpayer would want a useful life longer than that given, he would then prove "reasonableness."

5-10-Year Machine Life?

And the Chamber recommends average depreciable lives for durable machinery and equipment in the 5- to 10-year bracket, for buildings and fixed installations in the 20- to 30-year bracket.

This, the Chamber says, would (1) encourage depreciation of assets over lives of realistic length, (2) cut the interminable wrangling between taxpayers and the Treasury, and (3) would produce an upsurge in industrial activity that would quickly offset any temporary tax losses to the government.



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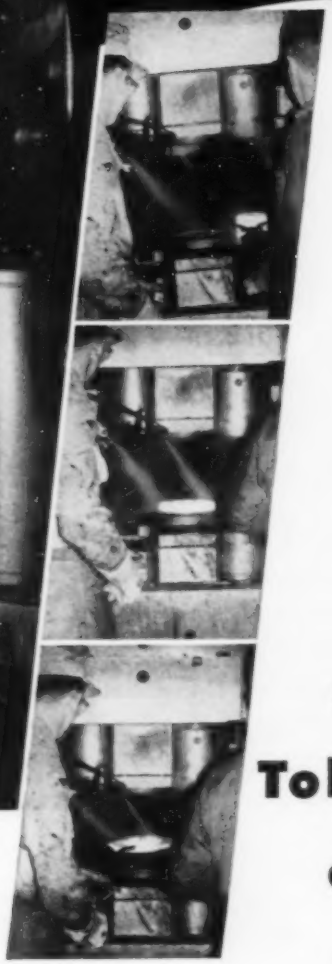

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FIELD REPORT...

More than a hundred U S metalworking firms have set up branch operations in a small island down in the Caribbean in the last decade or so—attracted there by a 10-year corporate tax exemption and a virtually untapped labor source. The island's semi-tropical beauty is unrivalled, its climate 78 degrees the year round. Its workers are willing, its wages are low, and profits can be fantastic—half your investment back in a single year isn't uncommon. But are there serpents in this industrial Garden of Eden? It took visits to more than a dozen plants, talks with scores of plant executives, economists and operating men down there to find out the pros and cons of setting up shop in

PUERTO RICO: what's down

ROBERT N SHEETS, news editor

SAN JUAN—Travel along almost any road here in Puerto Rico and you'll come across a small, neat plant with a sign out front, "Un Otra fabrica de FOMENTO." You'll find more than 500 of them the length and breadth of the island, sometimes a dozen or more clustered together to form the nucleus of an industrial area, sometimes just one nestled among the picturesque foothills — "Another factory of FOMENTO."

"Fomento" (literal translation: "Foment") is the Spanish code word for "Operation Bootstrap"—Puerto Rico's self-help plan to end unemployment and raise the economic standards of the island. But more about that later.

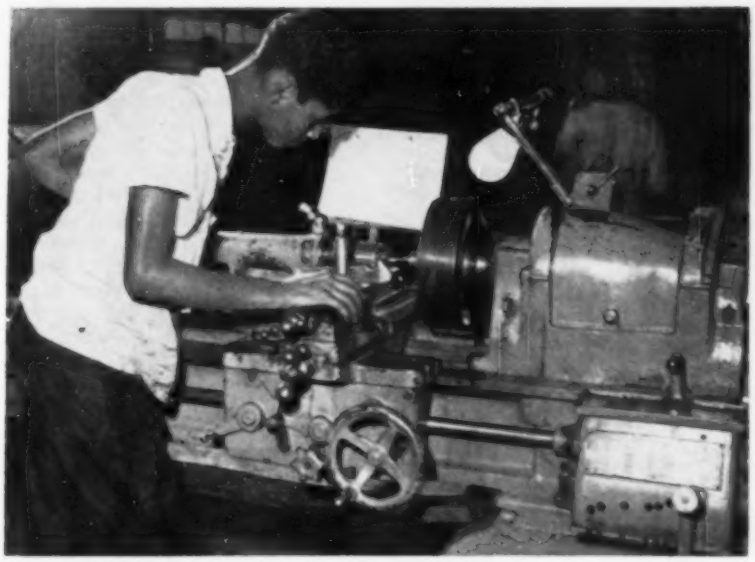
Among those 500 factories are 131 metalworking plants. Where do they come from? What do they manufacture? Do they market their products down here on this little island? Do they make any real moneey at it?

Let's take the last question first—"Do they make any money at it?" Just take a look at these fiscal 1955 profits of representative metalworking industries in Puerto Rico:

- A dozen recently surveyed metal fabricating companies averaged a 30.9% annual return on their equity in branch operations. Profit ratio to sales averaged 14%, against 4% after taxes in the States.
- Makers of "Machinery (except electrical)" chalked up a 42.8% annual return on equity, and a profit

FIELD REPORT...

Here are neat, well-laid out plants ready for you to move into . . .



A workforce government trained to your order . . .

. . . and unrivalled living conditions

there for U S Metalworking?

ratio to sales of 17.5% against 5% after taxes in the U S.

Where do these plants come from, and why are they down here? It's pretty obvious that they're down here, like any plant anywhere, to make money. But why Puerto Rico? Two reasons predominate—10 years of freedom from all corporate income taxes, and a tremendous labor pool that will work its head off for very little money by U S standards. You can add to these a year-round near-perfect climate, and picture-postcard settings of mountains, towering clouds and blue sea almost everywhere you look.

Do these 131 metalworking plants depend solely upon Puerto Rico as a market for their products? On the whole, no. Most of the plants are branches of Stateside firms. Components are shipped in from the home plant in the States, assembled into finished products and shipped back again to the home plant. A few plants are geared to markets in Puerto Rico itself or neighboring islands. These include the makers of aluminum windows, doors and louvers, who also do some shipping to the States.

Both types of operations are almost without exception profitable. Metalworking shipments to the U S mainland have moved up from $4.5 million in 1954 to $6.3 million in 1956, and 1957 is expected to see an overall increase in exports of 38% over 1956!

That's why more than a dozen branches of U S metalworking firms have moved into Puerto Rico this year alone. Last year 15 set up shop. The year before that, six.

(Continued on page 286)

FIELD REPORT...

Vocational training in Puerto Rico . . . is probably the most comprehensive in the world, because of the close liaison between the island government's educational program and industry

Let's talk about this Fomento plan and what it has done for Puerto Rico and American industry. But first let's see why Fomento, or "Operation Bootstrap," or EDA (Economic Development Administration of Puerto Rico) as it is variously called, is the most important thing to happen to Puerto Rico since its discovery by Christopher Columbus in 1493.

Puerto Rico has always been subject to the vagaries of a one-crop economy—King Sugar they call it down here. The planting, harvesting and processing of sugar provides three months of work each year—backbreaking work, too—for those lucky enough to get it. Until Fomento came along, the people of Puerto Rico either worked for King Sugar or, with rare exceptions, they didn't work at all.

FOMENTO AND KING SUGAR

And while the 500 Fomento-created industries today are challenging the dominance of the sugar industry, you'll still find the long green fingers of King Sugar—the canefields—poking right into the metropolitan area of San Juan. It's not at all uncommon to find a new plant completely surrounded by sugar-cane fields

Too, sugar's stranglehold on the precious land (2.5-million people on a 35-by-100-mile island) is one reason why you'll pay high for industrial plantsites, and why a homesite in a choice area will cost you just as much as one in New York's Westchester County or Chicago's North Shore.

That's because King Sugar has called the tune here in Puerto Rico for centuries. Even today, you can't set up a plant or a store, or build a hotel or apartment building on an acre of sugar-cane land unless your operation will provide work for more people than the acre of sugar did.

Credit for the Fomento Plan must go in a large measure to Teodore Moscoso, now head of EDA, who with Governor Luis Munoz Marin of Puerto Rico started it 15 years ago to relieve the chronic unemployment that has sent nearly a million Puerto Ricans to the States looking for work in the last few years.

Moscoso's idea: Dangle the twin lures of tax exemption and cheap labor before American industry.

TAX SETUP IS LENIENT

Puerto Rico enjoys complete freedom from U S corporate and personal income taxes because of its unique status as a self-governing Commonwealth "closely associated with the United States." To all intents and purposes almost one of the United States, Puerto Rico does not have a vote in U S elections. Therefore, while the island levies its own corporate and personal income taxes (pegged at about two-thirds of those in the U S), no company on the island, whether U S owned or not, and no one permanently employed on the island, has to pay U S taxes.

TEN-YEAR TAX MORATORIUM

Under the ground rules of Operation Bootstrap, a qualified branch of an American firm receives immunity from Puerto Rican corporate taxes for a period of 10 years after it starts operation. "Qualified" under the Bootstrap rules means simply this: No U S firm can move lock, stock and barrel out of the States and into Puerto Rico to take advantage of the freedom from taxes. A firm must set up an entirely new branch plant on the island, leaving the home plant intact—because the Puerto Ricans do not want to create jobs in Puerto Rico at the expense of unemployment in the U S. But a brand new company, formed by Americans, can set up shop in Puerto Rico and receive tax exemption, too. Americans employed in U S plants in Puerto Rico no longer pay American taxes, but they do have to pay the one-third-or-so lower Puerto Rican ones.

But, as one plant manager puts it, "a tax advantage is no damned good if you don't make money in the first 10 years," and it stands to reason a tremendous low-cost labor pool is almost useless to industry if you can't teach people the rudiments of mechanics.

Are there bugs in this industrial paradise, then? Maybe . . . businesses have failed, to be sure. But far more have prospered. If you fail down here, nine chances out of ten are it's your own darned fault.

Let's go back to the very beginnings of Operation Bootstrap—that's when most of the failures occurred. At that time, the government of Puerto Rico was desperately eager to bring in anything in the way of industry that would create jobs. Screening of incoming industries was desultory and, more often than not, companies walked into Puerto Rico with their eyes shut, dazzled by tax incentives, and in many cases with the aim of exploiting labor. Some had the idea of "get in, make a fortune while the tax moratorium is still in force, get out, and the hell with Puerto Rico."

(Continued on page 288)

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FIELD REPORT...

PUERTO RICO (continued)

Those days are gone forever, to the mutual benefit of Puerto Rico and American industry. Today, with Stateside interest in island industry growing by leaps and bounds, a prospective firm is carefully screened before being encouraged to move in. As the EDA people put it, "We don't want fly-by-night outfits in here whose chief purpose is the exploitation of labor and tax advantages. We want branches of reputable mainland industries to come in, and we want them to come in with their eyes open. It's no good for Puerto Rico if an industry comes down here to fail within a few months."

And that's why today EDA (Fomento in Puerto Rico, EDA in the States) offers the prospective manufacturer "a million dollars' worth of free consulting service." Want to know the lengths they'll go to, to set you up in business down here on the island?

PUERTO RICO AND YOU

Let's say you're a maker of electronic controls interested in putting up a branch plant—you want first off to know whether your operation has a chance for success, and if so, the mechanics of setting it up.

First thing to do is to get in touch with your local representative of the Economic Development Administration of Puerto Rico in the States. There's at least one in New York, Cleveland, Chicago, Los Angeles and Miami. Otherwise, you can get in touch with EDA headquarters at 666 Fifth Avenue, New York.

The EDA people will explain the ground rules of branch operation in Puerto Rico—tax advantages, shipping costs, facilities, industrial sites, economic advantages and disadvantages. If, after hearing all the pros and cons as applied to your own particular line of metalworking, you are still interested, the EDA people urge you to visit Puerto Rico and see for yourself.

EXPERT CONSULTING SERVICE

They'll put you in touch with EDA's Puerto Rican headquarters in San Juan (it's Fomento down here, remember) and from then on the island will roll out the red-carpet VIP treatment for you.

At Fomento headquarters you'll first meet and talk with top economists, men who have at their fingertips answers to every conceivable management question. They'll be honest answers, too, because here again, Fomento does not want to encourage an operation to come in and fail. At your beck and call are specialists in labor availability and training, selection of plant sites, availability of shipping, auxiliary facilities, taxation, housing, schooling for American children and almost any phase of plant setup and management.

Available to you, for example, are already-built standard multi-purpose plants, ideally located and suited to your particular type of metalworking operation. A low-cost adequate workforce will live within a very few miles of your plant—one that can get to and from the plant by walking, by frequent buses, or by "Publicos," the cheap, multi-passenger taxis that run everywhere in Puerto Rico.

All facilities—water, enough electric power to meet your needs—will be in the plant ready for the day you open. And if your operation is one in which noise control or air pollution is a problem, your plant will be located away from residential areas. This is true, too, if your product or operation is one in which excess humidity and corrosion are problems.

PLANTS FOR RENT

These multi-purpose plants, adaptable to industries ranging from underwear manufacturing to light metalworking, are designed by the Puerto Rican Industrial Development Co ("Pridco"), a government operation, and come in 6000 sq ft, 11,500 sq ft, and 23,000 sq ft sizes. Price of these plants (without land) runs from $5 to $7 per sq ft.

You can either rent one on a 10-year lease, with annual rental running 50¢ to $1 per sq ft, or you can buy it for a 40% down payment, with the balance payable in 15 years at the going rate of interest (currently 6½%).

FINANCING IS AVAILABLE

The Development Bank of Puerto Rico will finance your operation up to 50% of the appraised value of your machinery. There is no ceiling on loans except that they must not exceed 60% of the total value of buildings and land.

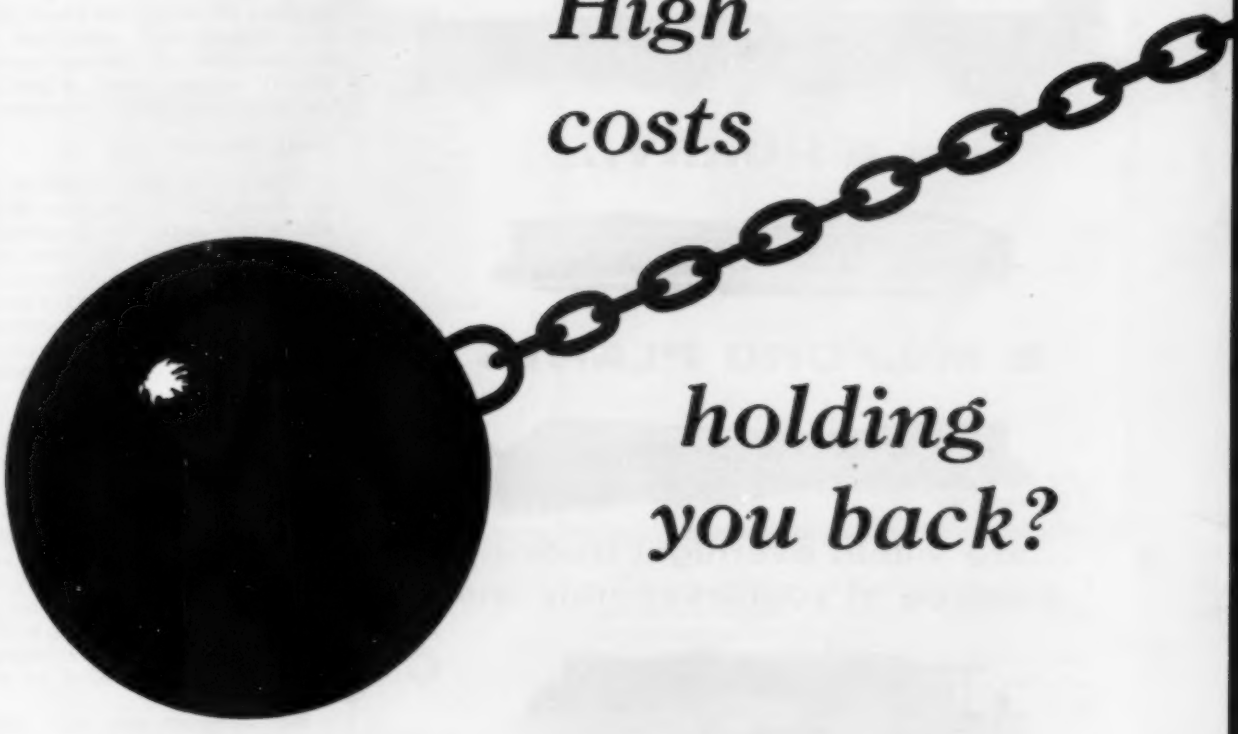
The Commonwealth of Puerto Rico is willing to provide some incentives to those plants that mean a great step forward in the economy of Puerto Rico. An outstanding example of this is American Can Co's big new metal can plant, which not only provides jobs in metalworking by actual can manufacture, but which also will give a great lift to the island's food industries. Government incentives take the form either of capital investment in plant and machinery, or assumption of half the cost of training workers.

Industrial plant sites, fully developed, are not cheap in Puerto Rico. A choice acre of industrial

(Continued on page 290)

Island metalworking shop . . . Monitor Industries, makes tools and dies as well as metal and plastic parts. Diversity of operations requires a highly skilled local workforce

High costs holding you back?



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Puerto Rico (cont'd)

land in or near San Juan, for example, can cost as much as $40,000. In the area of Ponce, Puerto Rico's second largest city, industrial land averages $10,000 to $15,000 an acre. Lowest price, in remote areas, is $5000 an acre.

Intra-island shipping presents few problems. The government has built big, wide arterial roads that bring any point on the island within a few hours' truck time from such ports as San Juan, Mayaguez, and Ponce. One firm, Valencia-Bast, specializes in shipping parts and finished assemblies all over the island, or back to the mainland, in sealed containers.

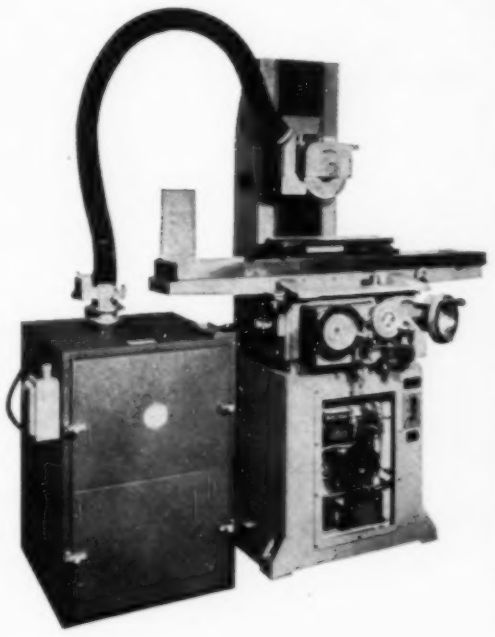
SMALL PRODUCTS BEST

Talking with EDA economists in the States and in San Juan about what type of metalworking operation is best suited to Puerto Rico, you find this rule of thumb seems to apply: your product must be (1) small, and (2) expensive. Most successful of the island's branch plants receive small components or subassemblies from the main plant back in the States, assemble them, and ship the final assemblies back to the U S.

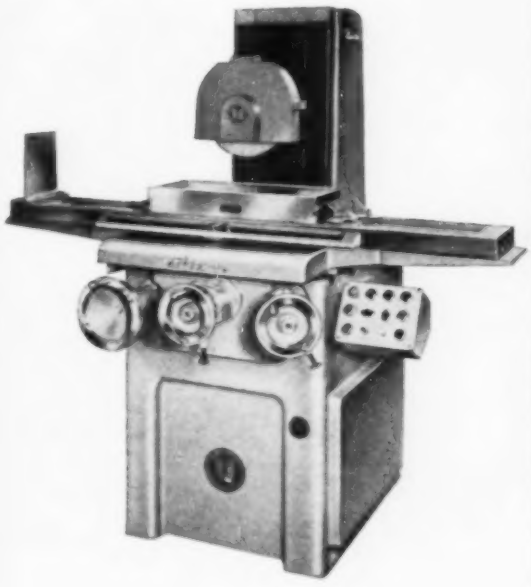
Shipping costs to and from the United States run from 1½¢ to 3¢ per pound by sea, and 12¢ to 16¢ a pound by air, depending on whether goods are shipped to and from, say, Miami or New York. Therefore the cost of shipping, for instance, pig iron into Puerto Rico, casting a 1000-lb machine tool base, and shipping it back to the States would be prohibitive.

But ball-point pens and photographic light meters, both of which are manufactured on the island, present a far different profits story. Tiny components are shipped from the mainland at an almost infinitesimal cost per piece per pound, are assembled into small expensive products. Light meters, for example, cost $25 to $30, weigh only a few ounces each. The same thing is true of electrical switches, electronic aircraft components and subassemblies, transistors, radio and TV parts and the like.

Successful, too, are those companies that market their products in Puerto Rico itself or take advantage of its centralized Caribbean location to sell their products in the West Indies and South America. Typical of firms in this category are the manufacturers of aluminum window frames, doors and louvers. Aluminum, of course, costs far less to ship than ferrous metals and alloys, and aluminum household products are



MODEL 618 P
with dust collector



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The REID-O-MATIC is a fully automatic, all electric, surface grinder with a capacity 8″ wide, 24″ long and 21″ from the table to the center of the spindle.

For your production and toolroom grinding, REID surface grinders offer the maximum in convenience, quality and economy.

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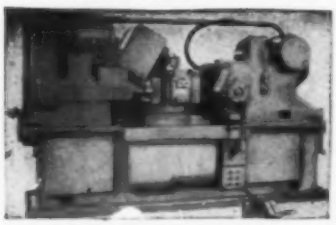

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Puerto Rico (cont'd)

finding a fast-growing market in Latin America.

Florida's makers of tropical aluminum window and door wares are becoming increasingly interested in manufacturing this type of goods in Puerto Rico, either for shipment back to the States or for the West Indian and South American markets —so much so that EDA at last count had a backlog of nearly 150 requests, had to set up a Miami office to take care of them.

LABOR COSTS LOW

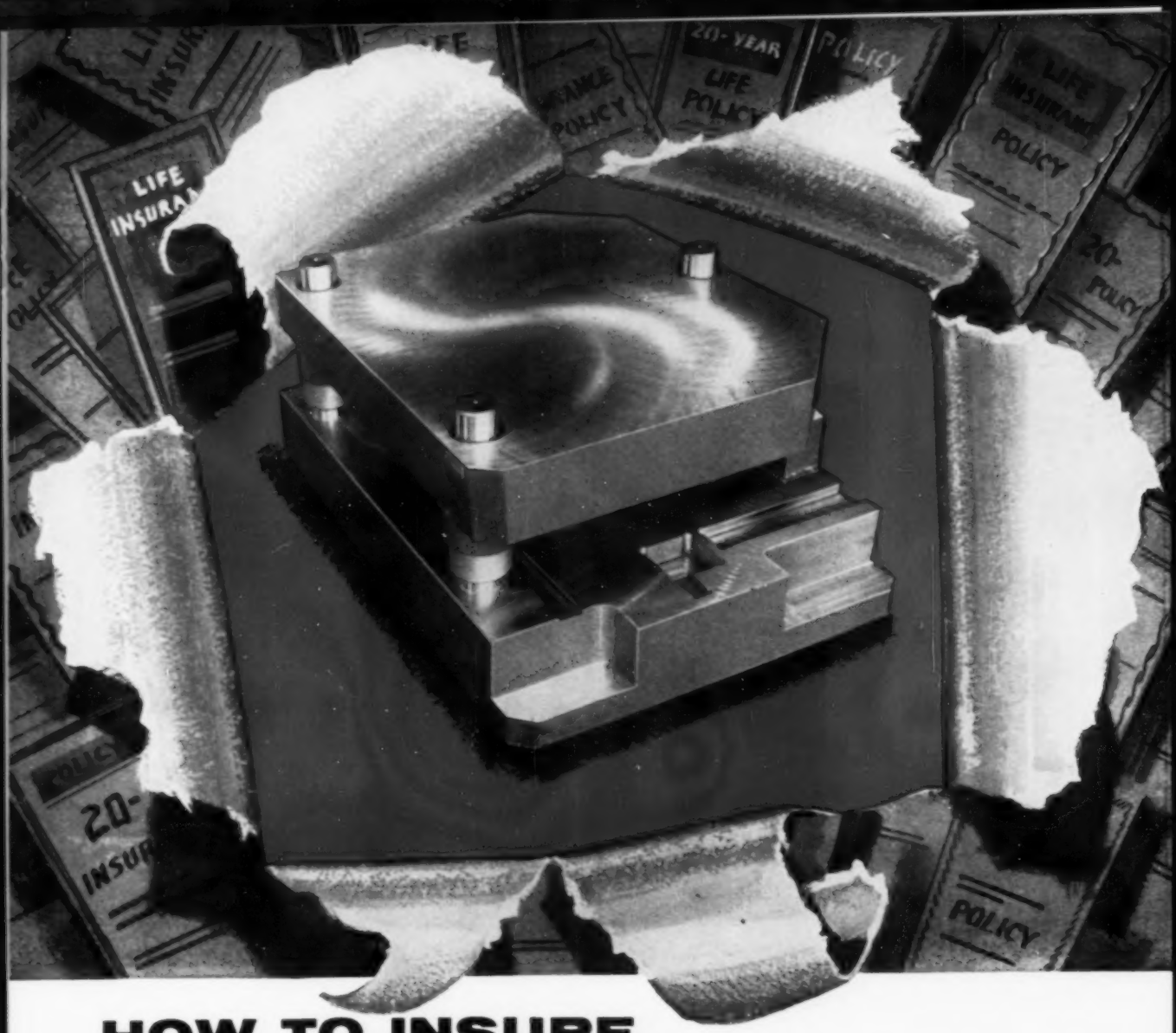
Now, let's talk about one of Puerto Rico's chief lures for U S industry —availability of almost unlimited low-cost (by U S standards) labor. On second thought, low-cost labor isn't one of the chief advantages, it's *the* advantage. After all, the corporate tax exemption lasts only 10 years.

There are upwards of 2-million people on this little island, making it one of the most densely populated areas on earth. Until Operation Bootstrap came along just 15 years ago, the people of Puerto Rico with few exceptions worked, when they could get work at all, for the sugar industry and the rum distilleries. Their wages were fantastically low. Then came Bootstrap with its higher-paying, non-seasonal industries and conditions improved, but this is only a beginning. Even today, 15% of the island's workforce (workforce, not population) is unemployed, and another 15% is employed only intermittently.

Even as late as 1940, the average annual income for an entire family —and they have big ones in Puerto Rico—was around $660. That meant a steady diet of rice and beans, with whatever fruit could be grown in the backyard (oranges, bananas, coconuts) thrown in. Meat or chicken were served only on feast days, if then.

Today average family income stands at about $2400 a year—pitifully small by American standards. Small wonder that most unemployed Puerto Ricans who can raise the fare still make a beeline for the U S mainland and higher wages.

It doesn't take much mental adding-up to figure that Puerto Ricans will do almost anything to get a job with the U S industries on the island. To them, the recommended minimum wage of $1 an hour (although most plants pay somewhat less than that) is a fortune. And, as one plant manager puts it, "There's no job in Met-



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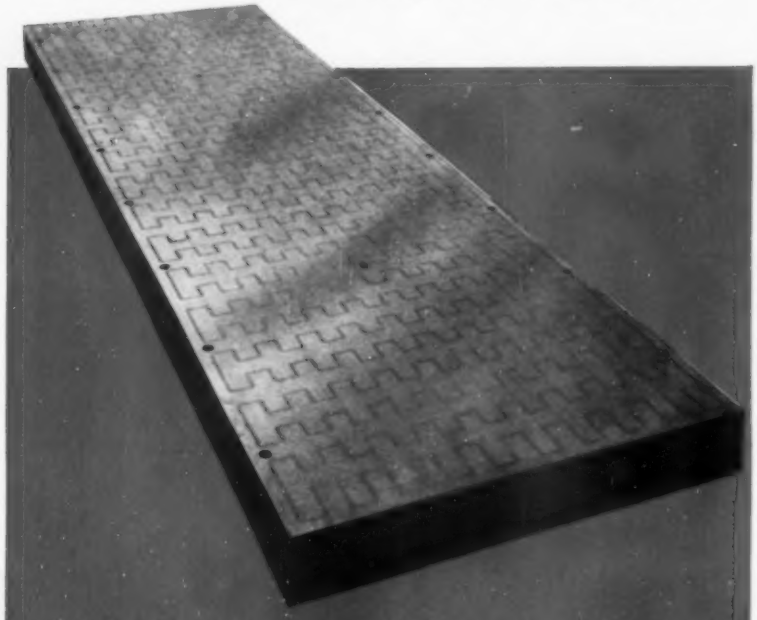

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O. S. WALKER COMPANY, INC.
WORCESTER 6, MASSACHUSETTS, U. S. A.

Puerto Rico (cont'd)

alworking half as backbreaking as that of the sugar-cane worker." That's one reason why absenteeism in industry down here is a low 2.2%.

How do metalworking wages in Puerto Rico stack up with those in the States? They run roughly 55% to 64% less. Take the machinery manufacturing industry, except electrical: In 1956 the hourly wage in Puerto Rico was 77¢, in the States, same type of job, $2.13. That's a difference of $1.36 an hour.

Or take the transportation equipment industry: Its workers made 97¢ an hour on the average in Puerto Rico, compared with $2.38 in the States—a difference of $1.41 an hour. Other fabricated metal products workers took in 77¢ an hour, as opposed to $2.13 Stateside.

General metalworking wages in Puerto Rico are said to have gone up somewhat in 1957 (as where haven't they?), and the all-industry average is around $1.05 an hour.

A government survey of 18 metalworking plants recently found that 26 supervisors made an average wage of $64.80 a week, with salaries ranging from $33 to $125.

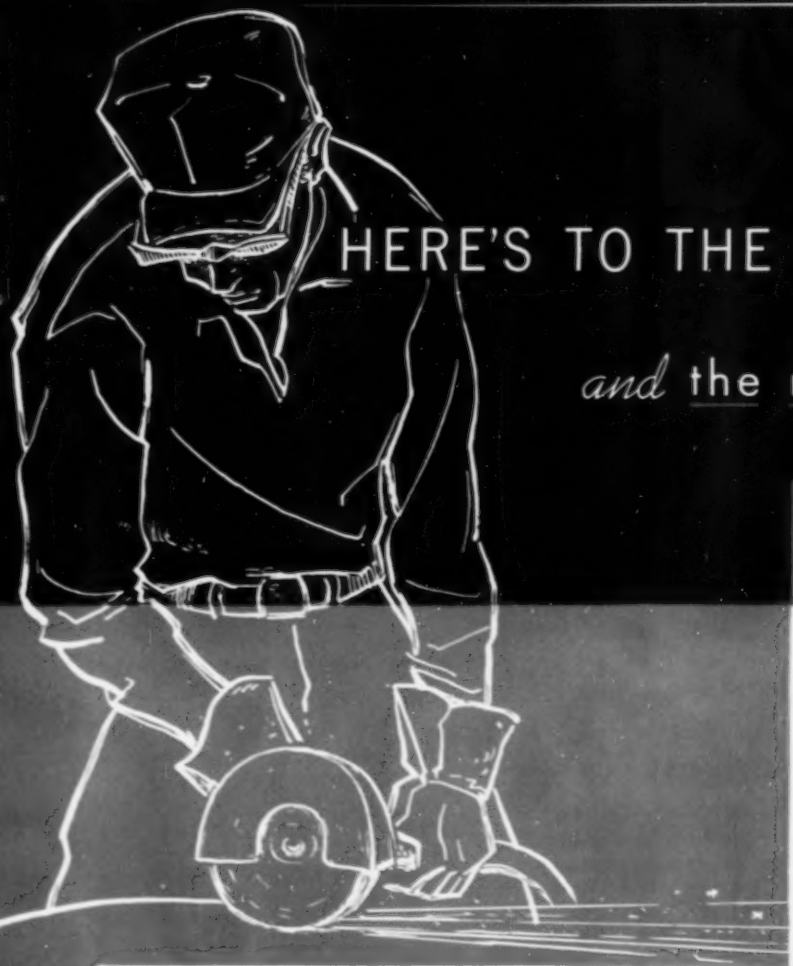
It should be explained here that while these industrial wages may seem very low by U S standards, they are considered more than adequate by the Puerto Ricans themselves. In fact, the Operation Bootstrap plants, with their $1-or-so-an hour average wages, have created something that Puerto Rico has never had before—a middle class.

Only six Puerto Rican metalworking companies have thus far been unionized, for a total of 1027 workers, although Walter Reuther's brother has just been down looking over the land for UAW-CIO, and several other unions are trying to get a foothold—albeit without too much success so far.

WORKERS ARE PRODUCTIVE

But granted that hundreds of thousands of Puerto Ricans are eager to take any kind of jobs in U S-run plants, do they make good employees? The answer is an unqualified "Yes," and this will be borne out by plants in the States that employ them, too.

Metalworking productivity on the island, according to an informal survey of plant managers, ranges from 88% to more than 100% of Stateside performance. A die caster, for instance, says his present Puerto Rican workforce is just as capable and productive at casting and buffing



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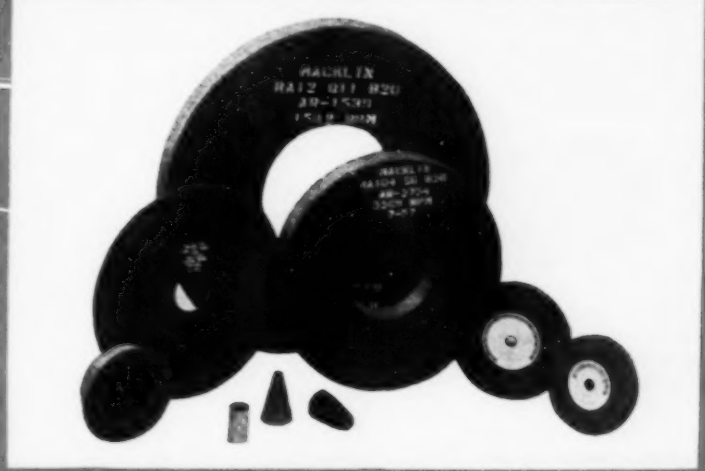

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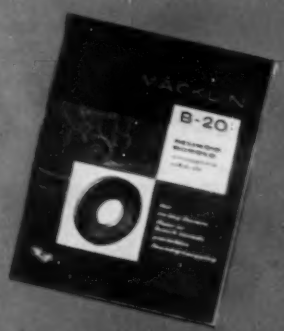

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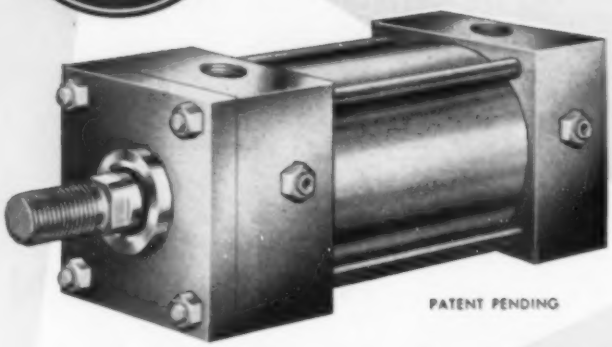

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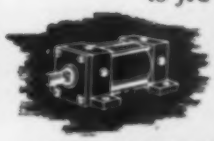

S-P STANDARD AIR CYLINDERS have brass tubes to eliminate corrosion. Cushions float on O-rings for maximum cushioning. Eleven bore sizes, 1½" — 14". 21 mounting types. Readily modified for oil or water. Send for Catalog No. 110.

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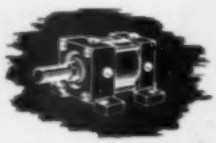

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POWER CHUCKS • COLLET AND DRILL PRESS CHUCKS • AIR PISTONS, VALVES, ACCESSORIES

Puerto Rico (cont'd)

as was the staff of two plants he managed back in the U S.

After only two years' operation, a tool and die shop head says his craftsmen are at 60 to 80% of Stateside standard, even though none of his men has completed more than half the normal 8000 hours' training for journeyman status.

"A lot of management people in the United States, mostly those who don't employ them, seem to have the idea that Puerto Ricans are stupid. Nothing could be farther from the truth—I've found them to be very intelligent and willing to learn." That's Harold Suiter, general manager of Proctor Electric Co's immensely successful Puerto Rican operation, speaking. He ought to know, he's one of the biggest industrial employers on the island—325 to 350 people.

"Worker responsibility is high. When I first came here, it was one of the hottest days of the year and I was much impressed with the terrific workpace the Puerto Ricans kept up even in the July heat. They deserve a tremendous amount of credit, after living in poverty for so long, for their willingness to learn and their pride of craft," Mr Suiter told us.

"Maybe it's high time we dispelled a lot of illusions about the Puerto Ricans," he added. "In the first place, they're not dirty and slovenly. They may live in wooden shacks but they come to work in clothes so clean I sometimes wonder if each one of those shacks isn't filled with automatic washers.

"People up there in the States have the idea, too, that the Puerto Rican is okay for bull labor and routine jobs but that he's afraid to take on responsibility. Nothing could be farther from the truth. Why, right here in this plant we have half a dozen young Puerto Ricans who could step into supervisory and management positions tomorrow and make a darned good job of it. All my foremen are Puerto Ricans. So is my general foreman, and so is my administrative assistant, and they're topnotch men by any standards."

It is management's job to get the most out of the island's workers by understanding them and their problems, Mr Suiter says. "It's management's own fault when a green worker inadvertently damages a job or a machine—these people have no words in their language to describe technical things, and you've got to

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COLONIAL NO. 6—Non-Shrinkable is a general purpose die steel worth having in stock at all times. It pays off in reliable performance on the widest variety of jobs. It pays off in simplified inventory—you can carry *one* steel in the sizes you usually require, because you can make almost anything with Colonial No. 6. Do you have full data on this easy-machining, safe hardening, simple to heat treat die steel? Write us for Colonial No. 6 facts you can use, and the direct help of a trained Vanadium-Alloys sales engineer.

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Pioneers in Automatic Lubrication

4341

Puerto Rico (cont'd)

get ideas across to them as simply as possible.

"They're so eager to please they'll say 'yes' to anything you tell them, whether they understand it or not. So it's up to us in management to school the workers in technical operations.

"But they are learning fast and they all have a tremendous desire to get ahead. They have a wonderful sense of personal pride . . . and when you find that, you find a good worker."

Puerto Rico's training program for metalworking takes a back seat to that of no nation. Given every assistance by the government at every level, from basic training of green workers to training of qualified tool and diemakers, even to in-plant schooling for supervisory personnel, Puerto Rico's training program is of necessity one of the most extensive in the world. It is a subject too comprehensive to be treated here, and will be dealt with fully in a forthcoming issue.

One final word about the workers of Puerto Rico:

Today most U S plants in Puerto Rico, particularly those in metalworking, can point to their employee-employer relationship with justifiable pride. With a long history of exploitation and pitifully low wages behind them, today's Puerto Rican factory worker is almost fanatically proud of his job and considers himself a man of considerable skill and standing in the community.

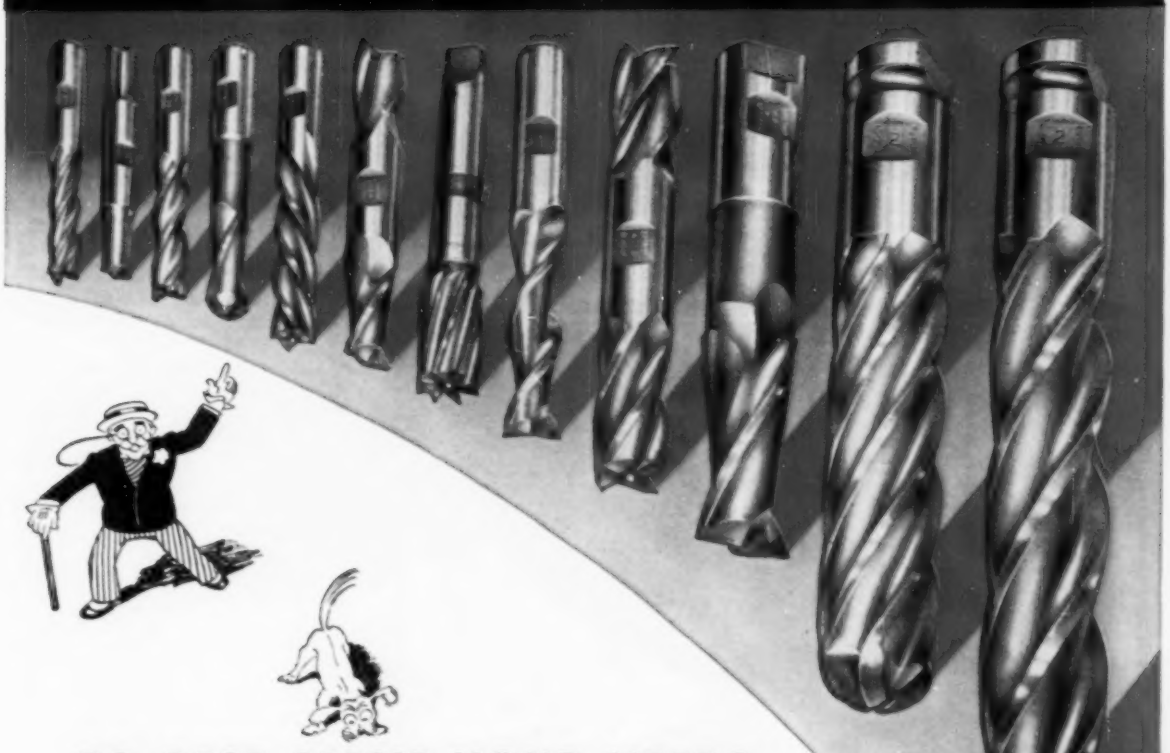
MORALE IS HIGH

Try and top this for worker morale: the girls in one plant are so proud of their jobs that they have bought themselves uniforms bearing the company's trademark. They buy them themselves, mind you, and it's all their own idea.

A girl becomes eligible to wear the uniform only after she achieves a standard of production set by her fellow workers. If for some reason a girl gets the uniform and fails to toe the mark, the other girls have ruled that she must stop wearing it until she gets back up to standard. The uniform—blue skirt and white blouse—is worn everywhere, at social events, dances, and on the street, as a badge of honor.

Too, the girls are proud of the plant itself—it's as clean as a whistle, air-conditioned and humidity controlled. They have asked the management to let each of them invite one or two people every month to

END MILLS ARE OUR BUSINESS . . .
NOT A SIDELINE



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Puerto Rico (cont'd)

watch them at work. It's a way of completely removing the onus of "factory girl" that has been attached to their kind in Latin countries ever since Prosper Merimee wrote "Carmen."

MAINTENANCE PROBLEMS

Auxiliary facilities and supplier industries for metalworking, with rare exceptions, are not up to Mainland standards on the island—and no one could expect them to be. That's why most metalworking companies try to be as self-sufficient as they can—particularly in the first 10 years of their operation, when the tax advantage makes it profitable to do as much in-plant heat treating, plating, testing and the like as possible.

Because of this do-it-yourself factor, island metalworking companies lay great stress on the hiring of topnotch maintenance men, often bringing in Americans from the home plant. These men must often of necessity completely rebuild a machine tool or tear down a production line and put it back together.

Other companies have almost all their tool and die work done by the parent company back in the States. Because of this policy of self-sufficiency and the tendency to let the parent company do much of the trickier work, suppliers and auxiliary firms have had a hard row to hoe in Puerto Rico. But there are quite a few facilities on the island in spite of that.

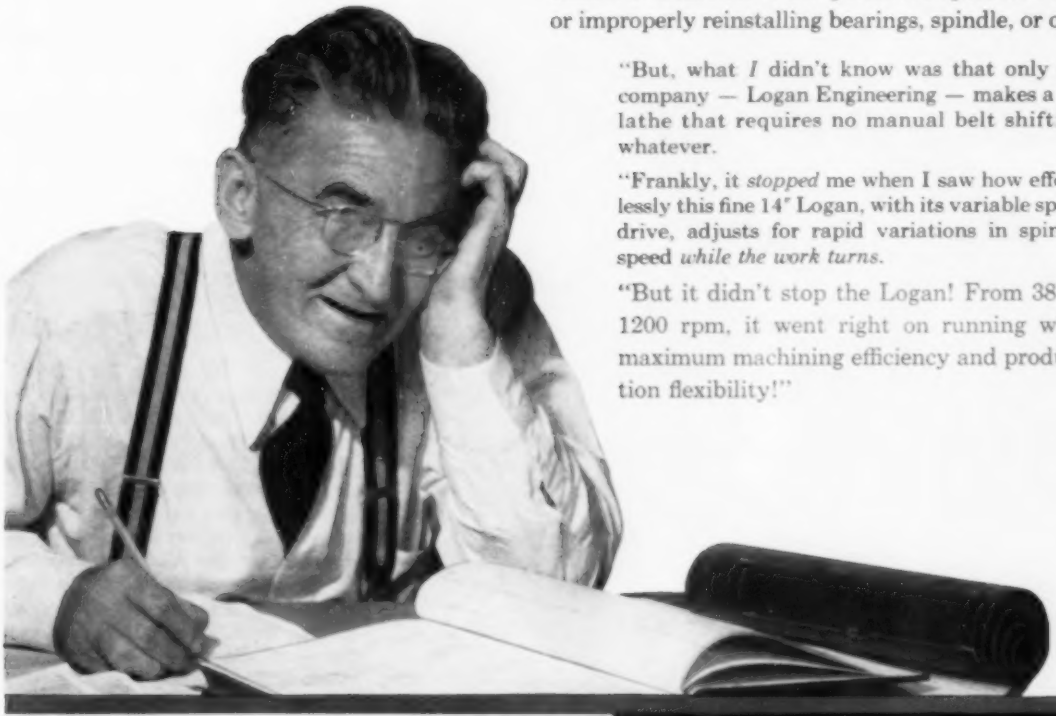
There are, for instance, several small nonferrous foundries; two or three big ferrous jobbing foundries, of which the Puerto Rican-owned Abarca in San Juan is the biggest, employing nearly a thousand people, primarily on sugar machinery maintenance and ship repair. Abarca, they say, is kept busy all the time and often has to turn down jobs from other metalworking plants.

Consequently, island metalworking people say, Puerto Rico could use a topnotch Stateside-owned production ferrous foundry. But the catch is that there are probably less than 20,000 tons of ferrous scrap available annually on the island, with an additional 30,000 tons imported annually from Cuba. With several foundries bidding for it, ferrous scrap is therefore at a premium, and it would cost a fortune to bring it in from the mainland, even Europe.

Imports of raw materials from countries other than the United States do, however, play a role in

"...and I thought I knew all about lathes!"

"Every Production Engineer knows that when you have to disassemble any portion of a lathe's headstock in order to change belts it means production slow-downs and the chance of a careless or inexperienced operator's misaligning or improperly reinstalling bearings, spindle, or other parts.

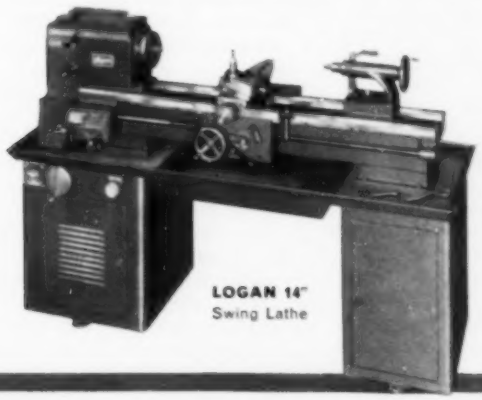


"But, what *I* didn't know was that only *one* company — Logan Engineering — makes a 14" lathe that requires no manual belt shifting whatever.

"Frankly, it *stopped* me when I saw how effortlessly this fine 14" Logan, with its variable speed drive, adjusts for rapid variations in spindle speed *while the work turns.*

"But it didn't stop the Logan! From 38 to 1200 rpm, it went right on running with maximum machining efficiency and production flexibility!"

NOTE: The above features are standard equipment also in Logan 12" screw cutting and turret models (variable speed range, 38 to 1400 rpm).



LOGAN 14"
Swing Lathe

Logan

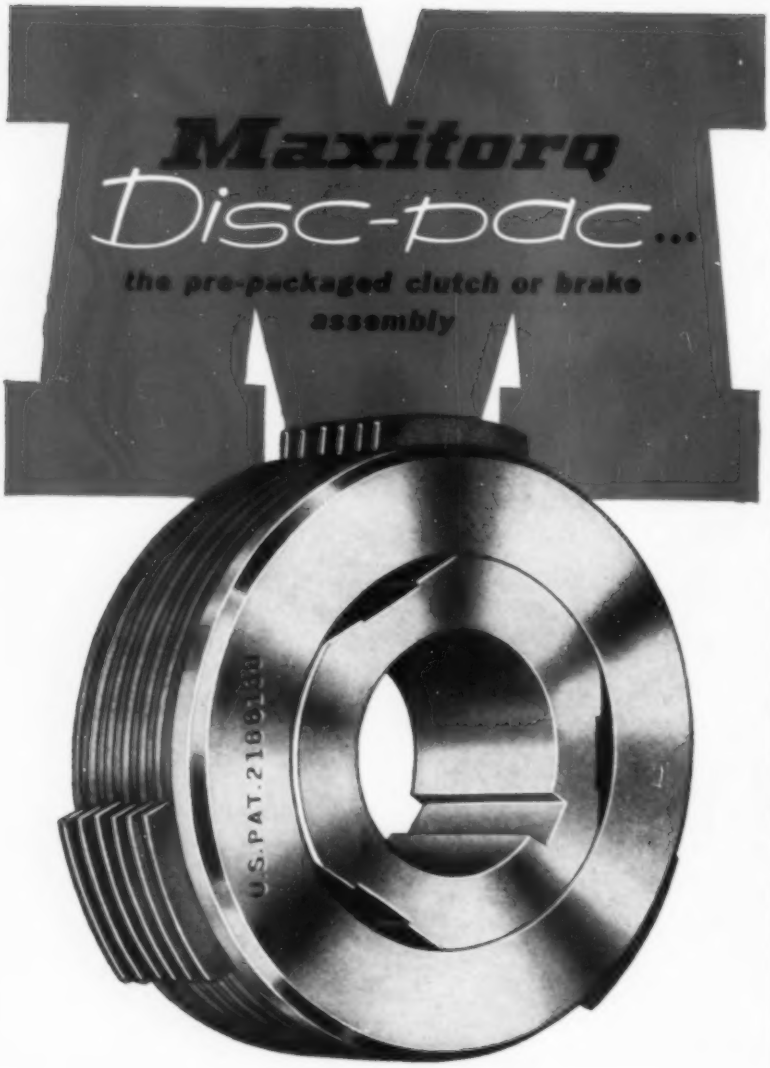
BALL BEARING SPINDLES—used exclusively throughout the Logan line—are factory pre-set for sustained accuracy far beyond normal expectancy. Result: spindles don't have to be set tight for one job, loose for another—and high speed carbide-tipped cutting tools can be used to fullest advantage.

Look at a **LOGAN** before you leap...

Catalog on request. Phone your Logan dealer or drop a line to:

The Logan line includes lathes from 9" swing and 17" between centers to 14" swing and 40" between centers. Also 8" shapers.

LOGAN ENGINEERING COMPANY DEPT. G-158, 4901 LAWRENCE AVENUE, CHICAGO 30, ILLINOIS



Takes performance guesswork out of power transmission design

With these performance-proved units, you can save time and money in designing and building clutches and brakes exactly tailored to the requirements of your application. At the same time, you can be sure that they will equal the performance and smooth operation of proved MAXITORQ clutches and brakes. DISC-PACS are simply the "heart" of a clutch or brake . . . the discs, separator springs, and locking plate . . . supplied as a complete self-contained unit for the convenience of design engineers and equipment builders.

Produced in a full range of sizes and capacities from ¼ h.p. to 15 h.p. Bulletins available on other MAXITORQ products: Floating Disc clutches and brakes, Electric clutches, Overload Release clutches, low-cost Single Disc clutches, and clutch or brake friction discs. Write Dept. AM-1.

THE CARLYLE JOHNSON MACHINE CO.
Manchester, Connecticut

1CJ58

Puerto Rico (cont'd)

island metalworking. Reinforcing rod and bars come in from the Benelux countries; cast iron pipe all the way from Japan, Italy and West Germany. The Japanese today are bringing in about $20,000 worth of castings and forgings a year, are undercutting U S and European prices to get a foothold on the island.

Puerto Rico has many back-alley shops that do surprisingly good specialty work—job plating, stamping, heat treating and anodizing. The island has two good ferrous warehouses, but it could use a good nonferrous one.

Plants on the island have in many instances come to rely upon each other for services. Proctor Mfg Co, which makes electric irons for sale locally and in the States, farms out its heat treating and some tool work to the nearby Sylvania Electric plant, near San Juan. This practice is quite common among plants located in the remoter parts of the island, too.

Anderson Hardware, for example, does contract zinc die casting for assemblers and fabricators, and Interstate Engineering does the same thing in aluminum. Monitor Industries, Caribe Mastercraft, and Sylvania Electric do custom tool and die work. Abarca, Puerto Rican Iron Works, and Akron International provide ferrous and aluminum castings. Kirk Wing Co does screw machine work, contour turning and forming, drilling, reaming, knurling, threading and tapping.

You can get plating work done by Hato Rey Electroplating, Kirk Wing Co, Caribe Findings, and Trophy-Craft Inc. Available, too, are several small shops that specialize in maintenance and repair of electric motors.

MACHINE SALES SMALL

Because of the newness of Puerto Rico's metalworking industry, sale of machine tools has not yet grown to sizable proportions. Tendency is for an incoming plant to purchase almost all of its machine tools and production equipment in the States. This confines local machine tool sales mostly to replacement—and it's a bit early for that—or to expansion of existing facilities. Puerto Rico's top machine tool dealer is Garcia Commerciale in San Juan, which handles some U S makes, plus several lines from Sweden, Britain, Germany and Spain.

Now let's take a look into an island metalworking shop—Monitor Indus-

tries Inc, owned by Industrial Electronics of Hanover, Mass. Because Monitor claims to be the only full-fledged tool and die shop on the island, servicing other metalworking plants as well as manufacturing proprietary products, this is an ideal place to get the feel of island metalworking, and learn some of its advantages and disadvantages.

Heading up Monitor, which is located a few miles outside the heart of San Juan, is Gordon A Pope, an MIT graduate. (Incidentally, to give you some idea of the caliber of engineers in Puerto Rico—there are 40 MIT graduates in San Juan alone).

Monitor makes tools, and forming, shearing, and multi-station progressive dies; multi-cavity molds; jigs and fixtures for other industries in Puerto Rico—such as lapping arbors for electric shaver manufacture, molds for grinding wheels, and dies for the aluminum window industry.

Monitor also makes and ships dies to the aircraft industry in the States,, and dies and stampings for motor controls to its Stateside affiliate, Monitor Controller of Rockland, Mass. The company has one or two proprietary products, producing metal and plastic parts for dolls.

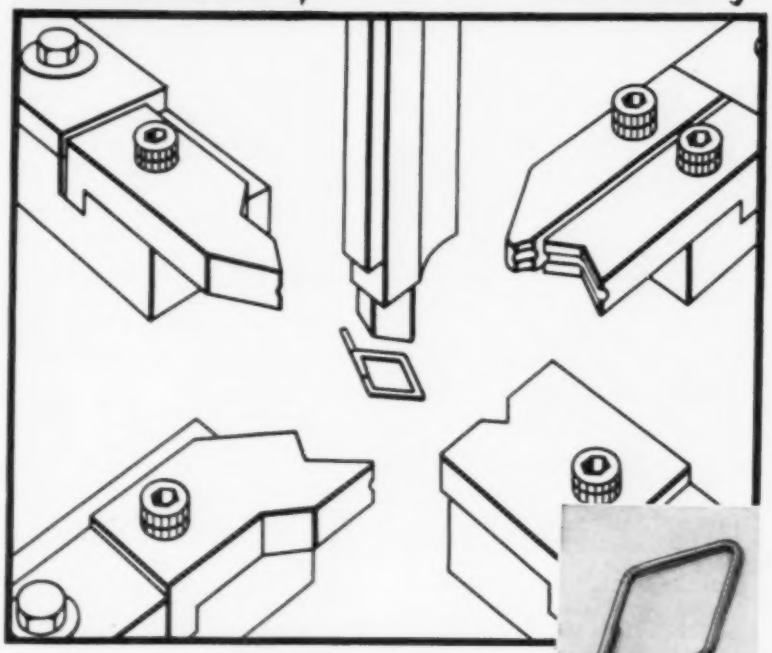
WORKERS MUST BE SKILLED

This diversity of operation requires what is probably the most skilled metalworking workforce on the island. The small (24-man) shop has four or five first-class tool and diemakers, and the rest are first- or second-class machinists. Top tool and diemakers are paid $2.30 an hour, were developed from first-class machinists. Monitor got most of its skilled people by advertising for them in Spanish language papers in New York and Chicago—a fairly common practice because most Puerto Ricans infinitely prefer to live in their own land if they can get reasonably good jobs.

Tool and die men at Monitor get anywhere from $1.45 to $2.30 an hour, its press operators $1 to $1.20 an hour. Monitor pays the U S minimum wage, $1 an hour, although it is not mandatory as yet in Puerto Rico. Labor turnover is negligible—only one man has left in the last year, to become maintenance superintendent at Sunbeam Corp at a much higher wage. And while Monitor's wages for skilled men may seem low by U S standards, they are high for the island. Not only that, the shop is on a 50 to 55-hour workweek and it pays time-and-a-half to double for overtime.

There are drawbacks to operating

NILSON 4-SLIDES FORMING PRODUCTION PROFITS... Automatically



16,000 PARTS PER HOUR on a NILSON Automatic 4-SLIDE

PRODUCT: Deadlock Hook
MATERIAL: Soft Basic Wire
PRODUCTION: 280 Pieces Per Minute
MACHINE: No. S-0 Nilson 4-Slide

Whether your product is formed simply . . . or requires complex bending in several planes . . . a Nilson 4-Slide may be the solution to your production problems.

The sketch above shows the tooling used by a leading manufacturer to mass-produce metal hooks—at the rate of 280 pieces per minute! A Nilson 4-Slide has proved to be the most efficient, economical way to manufacture this product . . . and many other kinds of wire forms and small metal stampings.

Manufacturing costs must be kept down to meet today's competition. The combination of high speed and product uniformity—basic advantages of Nilson 4-Slides—means maximum production, minimum operating costs.

Before you design, tool, or specify manufacturing methods for your product, get in touch with Nilson. Over 60 years of experience with wire and metal forming applications can help you form better products . . . more profitably.

SIZE RANGES:
Wire up to ½" diameter
Ribbon stock to 3½" wide
Feeds up to 32"
5 TO 75 TON PRESS SECTIONS

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THE A. H. NILSON MACHINE CO.
1501 Bridgeport Avenue • Shelton, Conn.
AUTOMATIC WIRE & RIBBON METAL FORMING 4-SLIDE MACHINES • WIRE & STOCK REELS • WIRE STRAIGHTENING EQUIPMENT • AUTOMATIC STAPLE FORMING MACHINES • SPECIAL WIRE FORMING EQUIPMENT

NEW DESIGN OPPORTUNITY

With Monarch Aluminum Permanent Mold Castings

Modern methods in mold designing—metallurgy—and mass production operations make Monarch Permanent Mold Castings more versatile to fully meet today's end-product requirements competitively.

From complicated industrial castings to finished consumer product castings, ready for assembly, Monarch's wide range of services offer "More Casting Value per Dollar".

This new approach to casting evaluation and "One Source" production in permanent mold—Aluminum Die Casting and Zinc Die Castings is presented in a new brochure, "Manufacturing Achievements in Molten Aluminum". Write for Your Copy Today.

MANUFACTURING in MOLTEN ALUMINUM ACHIEVEMENTS

MONARCH ALUMINUM MFG. COMPANY

9205 Detroit Avenue Cleveland 2, Ohio

Puerto Rico (cont'd)

a metalworking plant in Puerto Rico, Gordon Pope will tell you, but he'll tell you, too, that they are far outweighed by the advantages.

On the negative side is the poor quality of raw materials shipped in from the States. Tool steels, cold-rolled shapes and other materials sold as firsts in Puerto Rico are usually seconds. Flat-ground stock bought locally has to be ground to size most of the time, and Monitor finds it necessary to carry a much higher materials inventory than it would in the States because of the unreliability of shipping. And you can't get cold-rolled steel in Puerto Rico, only hot rolled.

But in spite of these difficulties, Monitor is today a humming concern. Gordon Pope attributes much of this to the skill of his personnel—"We've got all the really skilled tool and die people on the island"—a statement that would be hotly debated by other U S shops in Puerto Rico.

Monitor is perhaps the only contract shop on the island capable of repairing, or even completely rebuilding machine tools for other industries. Not only that, the company has designed and built machines for other firms—such as the unit that folds acetate for wallet enclosures. In fact, it's Monitor's boast that it can and will do almost anything in the metalworking line—"if four guys can lift it, we'll repair it or make it."

Its 11,500-sq-ft air-conditioned plant is equipped with four surface grinders, three lathes, a saw, shaper, a center grinder built in the shop from an old base, and six punch presses up to 24 tons.

The shop achieves die tolerances to within 0.00005 in., has every man in the shop make a quota of four die sets in his spare time—a good way of getting, in effect, a die set for free.

Monitor, like most metalworking plants on the island, is located inland, because it's axiomatic that "you don't put your plant right on the beach, where you'd like to have your house." Reason, of course, is that the closer to the water you get, the more trouble you have with corrosion. But it's been found that plants situated inland a mile or more have few corrosion problems that a little extra oil can't overcome.

YANKEES IN PUERTO RICO

Now let's talk about the American in Puerto Rico. Perhaps that's the wrong word because the Puerto Ricans are Americans, too. Down

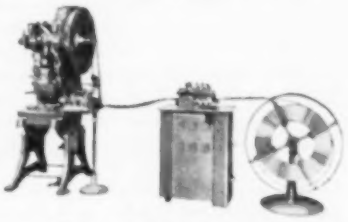
(continued on page 309)

FLEXIBILITY in Stock Straightening

WITTEK

STOCK STRAIGHTENERS

Used in conjunction with a reel stand and automatic feed for punch presses, the Wittek Stock Straightener is a self-contained, motor-driven unit designed for maximum efficiency in the continuous straightening of coiled stock. Standard models handle stock with widths up to 12 inches. An infinitely variable speed drive permits any desired straightening speed so that the proper slack is maintained in the straightened strip between the unit and the press feed.



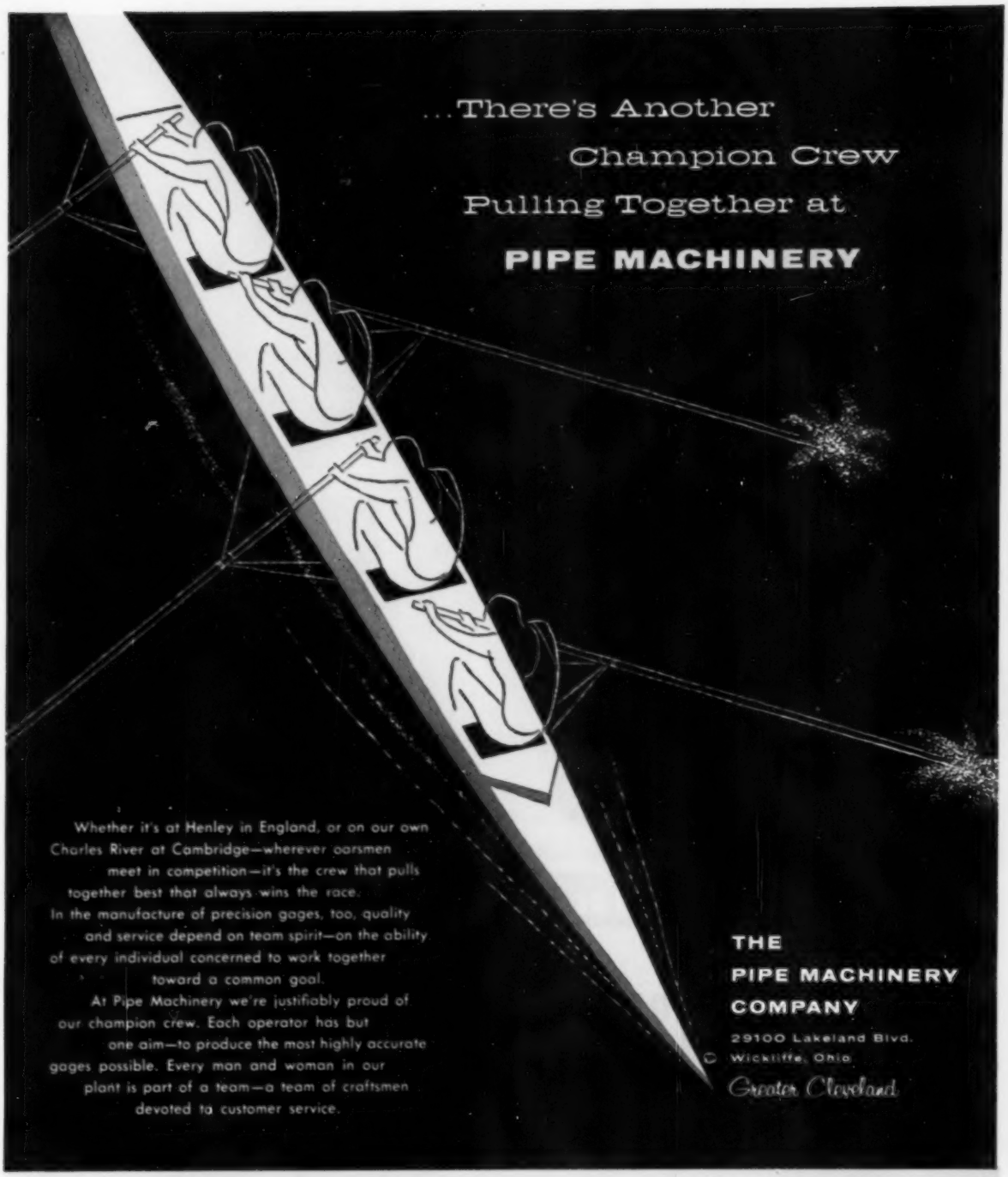
This typical Wittek automatic production feeding setup includes—Wittek roll feed mounted on the punch press, Wittek stock straightener, and Wittek self-centering reel stand.

Write for full particulars

WITTEK Manufacturing Co.

Production Feeding Equipment

4320 W. 24th Place • Chicago 23, Illinois



Whether it's at Henley in England, or on our own Charles River at Cambridge—wherever oarsmen meet in competition—it's the crew that pulls together best that always wins the race.

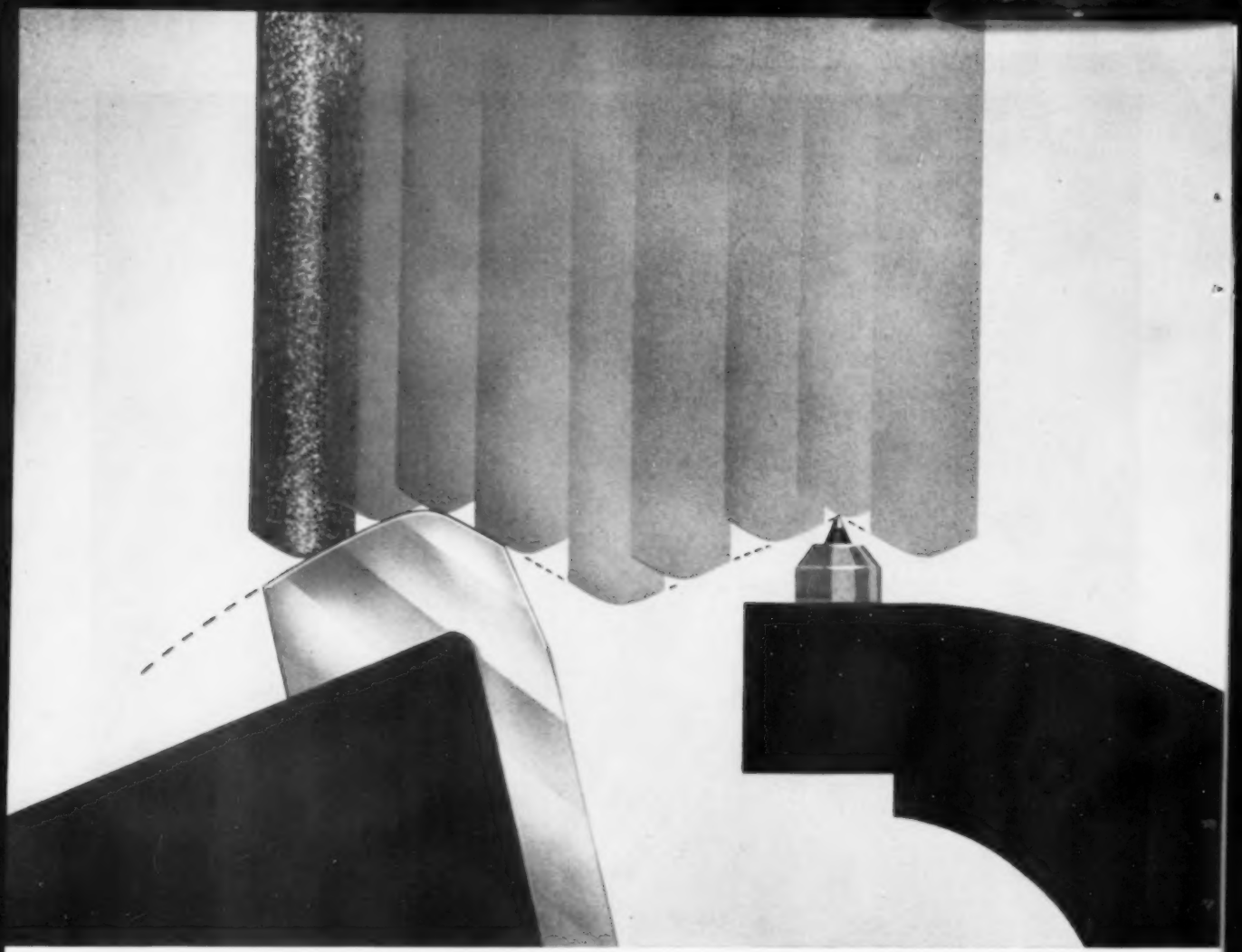
In the manufacture of precision gages, too, quality and service depend on team spirit—on the ability of every individual concerned to work together toward a common goal.

At Pipe Machinery we're justifiably proud of our champion crew. Each operator has but one aim—to produce the most highly accurate gages possible. Every man and woman in our plant is part of a team—a team of craftsmen devoted to customer service.

THE PIPE MACHINERY COMPANY

29100 Lakeland Blvd.
Wickliffe, Ohio
Greater Cleveland

We invite you to get acquainted. Send for our #10 catalog or, better yet, stop in and see our champion crew in action next time you're in Cleveland.



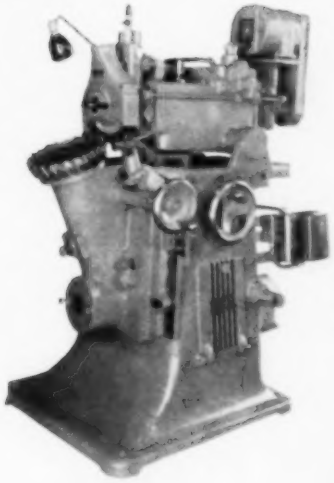
Oliver AUTOMATIC Face Mill Grinder

Wheel dressed with every stroke

Oliver face mill grinders are made in four sizes to accommodate cutters from 4" to 21" diameter.

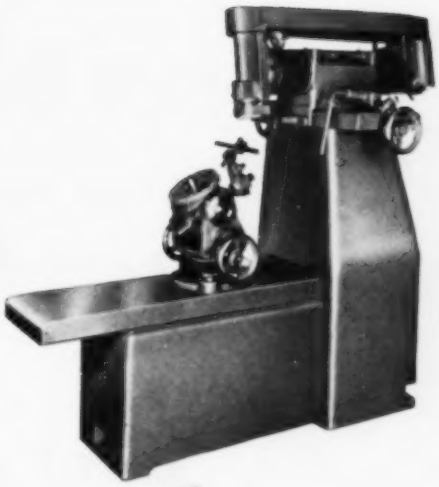
The drawing above shows the grinding wheel passing over a cutter tooth after being dressed and formed automatically by a fixed diamond. This happens with each stroke of the Oliver automatic face mill grinder. Thus, complete accuracy of grind is certain regardless of the number of teeth in the cutter. This exclusive Oliver of Adrian feature prevents loading of the wheel and also permits carbide grinding with a silicon carbide wheel. Automatic feed-down accurately compensates for each dressing thus providing a fixed grinding line.

The machine automatically indexes the cutter and controls the tooth shape by a simple cam arrangement so that any practical roughing or finishing form can be obtained. The machine grinds the corner angle, corner radius, face and dish all in one operation. Oliver's face mill grinder is hydraulically operated for smooth, fast (4 to 8 times faster per cutter), accurate and quiet performance.



OLIVER *Automatic*
FACE MILL GRINDER

. . . features real economy and fast, accurate grinding. One operator handles several machines. Set-up is simple. The cutter is mounted on the face plate and the automatic indexing mechanism adjusted. Required clearance is set by moving the work spindle to the desired position. All surfaces and radii are ground in one continuous operation.



OLIVER *General Purpose*
FACE MILL GRINDER

. . . heavy duty; for all types of face mill grinding on coarse and fine pitch cutters from 4" to 24" in diameter. All angles and clearances are instantly obtained without calculation. The cutter face, periphery and corner angles may be ground without altering the lip rest setting. The machine is completely universal.

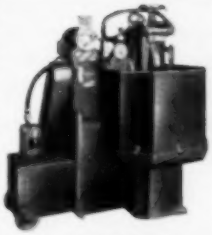
OLIVER *Arc Radius*
GRINDER

. . . for accurate sharpening of face mills, channel cutters, slotting cutters, etc. The face, periphery and corner radius are ground with one pass of the wheel; radius blended in perfectly. The machine will sharpen any radius up to two inches. Periphery clearance may be greater than the face. If desired, the machine will give a straight grind. High speed, diamond wheels may be used.

More **OLIVER** *of* **ADRIAN** *Tool Grinding Equipment*

ACE TOOL and CUTTER GRINDER

Universal—grinds milling cutters, other cutting tools. Especially suited to grinding tungsten carbide.



TEMPLATE TOOL BIT GRINDER

Controlled form grinding for high speed, stellite and tungsten carbide single point tools.

No. 510 DRILL POINTER

Semi-automatic. For drills ¼" to 3" in diameter. No. 21 bench models available for size ½" and smaller.

DRILL POINT THINNER

For low cost reclaiming of drills. Corrects off-center and too-thick webs and out-of-index cutting edges.

DIE MAKING MACHINE

Produces dies, gages, cams, templates, stripper plates, etc. at greatly reduced costs. 5 designs in 2 types.

Just check the coupon for literature on the OLIVER of ADRIAN machine you are interested in. Send it today to...

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OLIVER INSTRUMENT COMPANY
1414 E. Maumee St. • Adrian, Michigan

- ☐ Drill Pointer
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- ☐ Literature only
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- ☐ Drill Point Thinner
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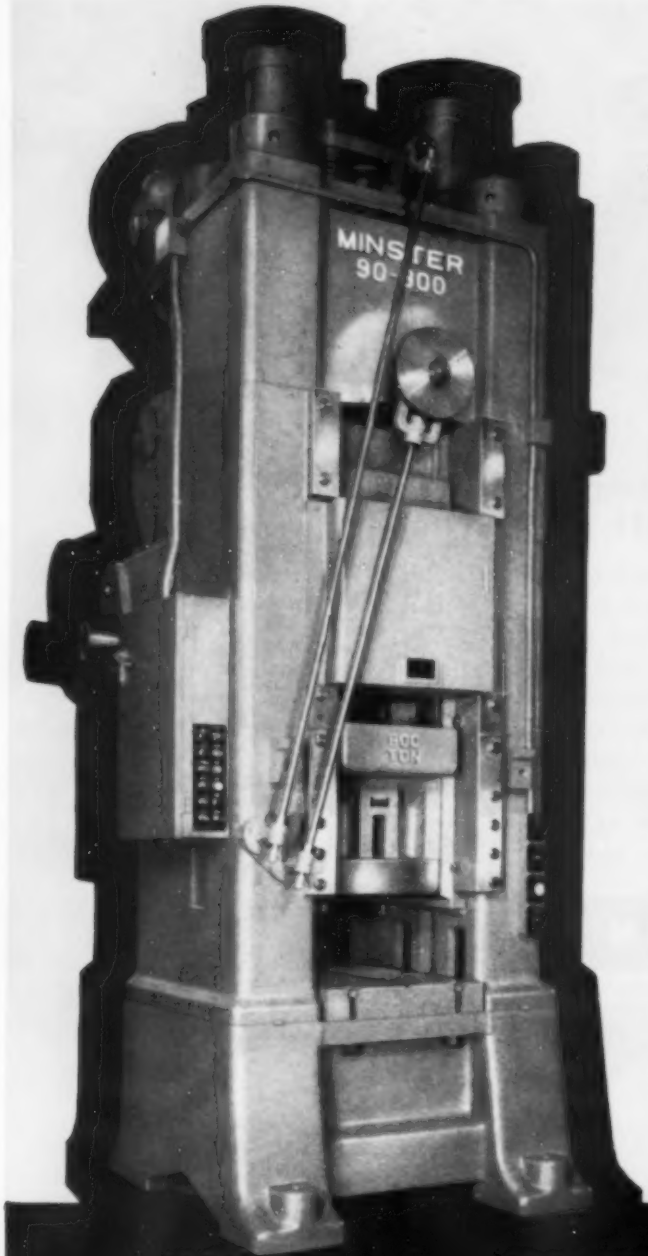


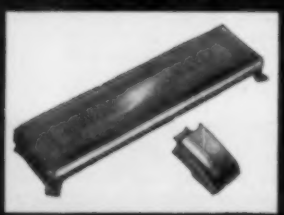
These Outstanding Features Make MINSTER KNUCKLE JOINT PRESSES More Productive

- The Precision Built into the Press Gives You Greater Parts Accuracy—Longer Press Life
- More Single Stroke Operations per Minute
- Higher Speeds for Greater Velocity of Impact
- Positive Continuous Lubrication Provides Greater Precision, Reduced Wear, Less Maintenance
- Massive Frame and Tie-Rod Construction Withstands the Tremendous Forces of Knuckle Joint Press Work

SIZING

COINING

EMBOSSING



THE MINSTER MACHINE COMPANY

MINSTER, OHIO

Puerto Rico (cont'd)

here the popular word for U S Mainlanders is "Continental," a term that is particularly confusing because it is usually associated elsewhere with Frenchmen, Belgians and the like.

The cost of living at middle-to-upper-middle class levels by U S standards is roughly comparable to that in the States. Your dollar goes just about as far in San Juan as it would in New York, in Ponce as it would in Los Angeles, in Mayaguez as it would in Des Moines. That is to say the smaller the city, the less "keeping up with the Joneses," and the fewer expensive diversions.

In San Juan, for instance, an apartment that would be acceptable to an American family pretty much falls into the luxury bracket. Such apartments, in the most Americanized section, Santurce, take some finding, but you can get a three-bedroom apartment in a very good building for around $110 a month. Apartments in outlying, but still choice, areas such as Rio Piedras and Bayamon run a bit less, are a little easier to get.

If you want to rent a house in the San Juan area, it'll cost you anywhere from $125 to $250 a month, for a two or three-bedroom place equipped with maid's quarters. One American we talked to found a two-bedroom house with its own beach, 15 minutes from downtown San Juan, for $125 a month—but that's the exception.

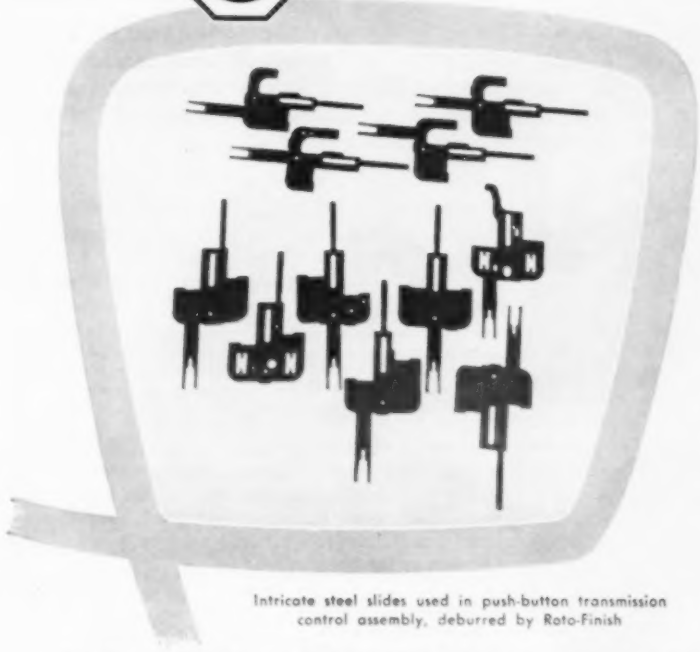
In Ponce, Puerto Rico's second largest city, we talked with an American metalworking executive who rents a modern, six-room house for $192.50. It's pretty, has a nice patio and garden but, he says, "I'm still paying $50 a month more for it than it's worth by U S standards."

LAND IS EXPENSIVE

Most Americans in Puerto Rico wisely prefer to rent for the first few years until they see how their operation is going and whether they can accustom themselves to life on a semi-tropical island. Those who decide to buy or build a house will find property is expensive.

That's because the sugar interests have a tight hold on most of the land available for either residential or industrial building. They're not only reluctant to part with the land that's their livelihood—they can't do it without express permission from the government because of the "you can't take over productive land with-

and the ROTO FINISH® push button driving... story behind it...



Intricate steel slides used in push-button transmission control assembly, deburred by Roto-Finish

3000 PIECES PER HOUR DEBURRED AUTOMATICALLY

That's the story of one *Roto-Finish* machine installed in a Detroit automobile plant to deburr push button transmission control slides. All the operator does is load parts into the machine. The balance of the 30 minute cycle is entirely automatic. Man power savings are tremendous!

PROCESSING MATERIAL COSTS FOR 100 PARTS—JUST 2¼¢. The cost of processing materials, both chips and compound, is .0223¢ per piece.

SEND FOR YOUR FREE ROTO-FINISH HANDBOOK

PUT ROTO-FINISH ENGINEERING SKILL AND OUR YEARS OF PROCESSING EXPERIENCE to work for you. In either your plant or our laboratory, our process engineers will prove, before you buy, that Roto-Finish provides the finish you want at a lower cost. Phone or write today.

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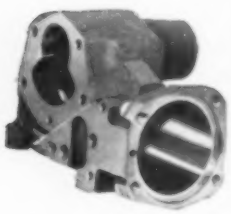
Why MICROHONING

Is Final Stock Removal Process For Interrupted and Blind-End Bores

To secure low-cost, final stock removal, that generates accuracy and functional surface characteristics in a variety of bore conditions, a leading manufacturer of power steering assemblies uses Microhoning. Here are details concerning types of bores and stock removal results obtained by using Micromatic "Know How"—



STEERING GEAR HOUSING—Microhoning consistently corrects cumulative inaccuracies of preceding operations—reduces scrap—permits faster boring—cuts boring tool sharpenings—lowers down-time and tool costs.

Material: Soft Malleable Iron
Bore: 3.125"D x 6.93"L (Ported bore with ¼" relief at blind end)
Stock Removal: .002"
Finish: 50 Microinches RMS
Microhoning Cycle: 18 sec.
Preceding Operation: Boring

PISTON RACK—Microhoning answers the need for a final stock removal process that generates a controlled surface finish in the bore of this leaded steel part. Microhoned surface (cross hatch) prevents oil leakage and holds to a minimum the wear of seal that operates in the bore.

Material: Leaded Steel (Rockwell 62 "C")
Bore: .875"D x 3"L
Stock Removal: .005"
Finish: 20 Microinches RMS
Microhoning Cycle: 20 sec.
Preceding Operation: Boring and H.T.

VALVE HOUSING—Microhoning consistently holds size and geometric accuracy—meets stringent surface requirements—assures alignment of four lands in bore. Thus, there is no leakage of oil around control valve which is selectively fitted to its housing.

Material: Cast Iron
Bore: .770"D x 2.18"L (Interrupted)
Stock Removal: .0025"
Tolerances: Size .0005"
Roundness .0001"
Straightness .0001"
Finish: 10 Microinches RMS
Microhoning Cycle: 12 sec.
Preceding Operation: Boring

The principles and application of Microhoning are explained in a 30-minute, 16mm, sound movie, "Progress in Precision" . . . available at your request.

☐ Please send me "Progress in Precision" in time for showing on _____ (date).
☐ Please have a Micromatic Field Engineer call.
☐ Please send Microhoning literature and case histories.

NAME _____ G
TITLE _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

MICROMATIC HONE CORP.
8100 SCHOOLCRAFT AVENUE · DETROIT 38, MICHIGAN

Puerto Rico (cont'd)

out creating the same number of jobs as the land did" rule.

Consequently, in all but rural areas if you build a house you must do it on development land. In other words, you can't just go out and spot a choice location all by itself and build a house there. A typical example of this is to be found just outside Ponce, where a fairly nice valley has been sold by the sugar people for residential development. There, land costs about 80¢ a square foot, and that's pretty expensive even for fancy U S suburban areas. It amounts to around $5000 for a 65 x 100 ft lot. That's Ponce, and residential land can run even higher in San Juan.

Costs of building a house, however, somewhat offsets high land prices. Cheaper labor brings the price down to maybe 75% of comparable U S costs, and you don't have to build basements and elaborate foundations. Too, most houses in Puerto Rico are of the solid concrete type that require virtually no maintenance. And carpets and rugs are a nuisance in Puerto Rico. The cool tile floors do wonderfully well by themselves. You won't have any heating bills, either.

Electricity will run you 2.2¢ per kwh—roughly the same as rates in most U S urban areas. Cooking is done either with electricity or propane gas. And to do your cooking, clean your house and act as a full-time, built-in baby sitter, you can get a maid for $40 a month.

You'll find gardening is a spectacular thing down here on the island—"break off any twig, shove it in the ground, and a new plant comes up in a couple of weeks." You can pick oranges off your own trees—lemons and limes, too. There are dozens of varieties of banana you can grow in your own back yard, including one that tastes exactly like an apple. Chances are you'll have a coconut palm or two of your own, too. Not only will you get fresh coconut milk from them, you can make wonderful tropical drinks with coconut milk, Puerto Rican rum at less than $1.50 a bottle, and juice from pineapples grown on the island. Want a delicious hors d'oeuvre? Just take coconut meat, stick it in the oven for a few minutes and salt it.

But aside from tropical fruits in season, you're going to pay more for groceries than you did in the States. Vegetables, fruits and meats run about 18% higher because they're

"imported" from the U S mainland. Canned goods will cost you 5 to 7% more.

You'll find the quality of food somewhat inferior to that on the mainland. Meats, 95% of which are imported, aren't quite U S Prime, and it's hard to get a really good steak, for instance. The Puerto Ricans raise some chickens and produce some eggs locally, but they're generally inferior to what we're accustomed to in the U S. Some $5.5 million worth of poultry and eggs are brought in annually from the U S to fill the gap.

Lettuce is very high, 35 to 40¢ for a 15¢ head, and you get iceberg only —none of the fancy varieties. You'd think tomatoes would be cheap in a tropical land. They're not. For some reason they just won't grow properly and have to be brought in. Milk is 24¢ a quart, delivered.

But things are looking up. The government has set up dozens of brand new supermarkets all over the island—a move that has brought food prices down nearly 20% in a single year. Associated Food Stores are setting up a new food distribution system that may drop prices almost as much in a year or two. A new meat-packing plant is being set up in Puerto Rico that will not only bring prices down but will improve the quality of meat.

You'll save money on clothes. The business uniform is a $7 pair of Sears Roebuck orlon slacks and a sport shirt. You wear summer clothes the year 'round, a jacket only to the fanciest restaurants. American women dress informally, seldom wear stockings. Puerto Rico is a "dumping ground" for last year's fashions from Florida, and you can get tropical clothes very cheaply by shopping around a little.

LIVELY SOCIAL ACTIVITY

And that brings up the social life of an American family in Puerto Rico—and here's where island living really pays off.

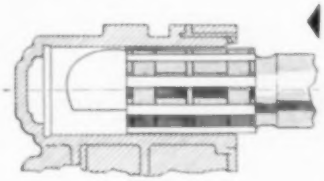
You can belong to a beach club in the San Juan area for $50 to $100 a year for the whole family. Golf clubs are just about as cheap. Each of these clubs, in addition to swimming, boating and the like is a social center where dances, bridge games and all sorts of events are held weekly. No club in Puerto Rico is exclusively American—thus they provide you with a chance to make friends with the people of the island.

This is particularly true in the outlying areas, such as Ponce and Mayaguez, where almost all enter-

How MICROHONING

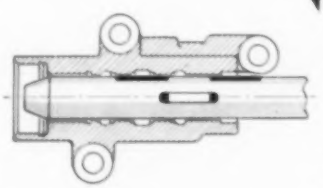
Cuts Costs—Generates Accuracy—Speeds Production of Interrupted, Blind-End Bores

Shown are two Microhoning machines that are used in the plant of a leading manufacturer of automotive power steering assemblies. Machines are equipped with automatic stone feed and stonewear compensating mechanisms, and automatic sizing controls. A two-position rotary fixture is interlocked with machine controls for fully automatic index cycle. The following applications tell more of the "how".



STEERING GEAR HOUSING—In Microhoning the ported, blind-end bore of steering gear housing a nine-stone tool is used. At least six of nine stones are in contact with bore surface when tool passes over irregularly shaped port. Removing .002" of stock from 3.125"D x 6.93"L bore in 18 seconds, Microhoning generates final accuracies and a controlled finish of 50 microinches as specified.

PISTON RACK—In 20 seconds, Microhoning removes .005" of stock from .875"D x 3"L open end leaded steel bore of piston rack. Self-sharpening abrasives assure a consistent generation of specified surface finish of 20 microinches.



VALVE HOUSING—Microhoning tool used for final stock removal in bore of valve housing has one bank of stones and two banks of plastic guides—three stones or guides in each bank. Guides act as tool pilots and stabilizers in interrupted bore—prevent overcutting at edges of lands—assure straight bore by keeping tool aligned. Self-dressing abrasives consistently generate geometric accuracy of .0001" and surface finish of 10 microinches.

Microhoning economically removes stock—corrects cumulative inaccuracies of preceding operations—reduces scrap—permits faster boring—lowers machine tool downtime and maintenance to cut costs and speed production.

Send Coupon for Complete Information

Learn how Microhoning will give efficient stock removal, closer tolerances, accurate alignment and functional surfaces.

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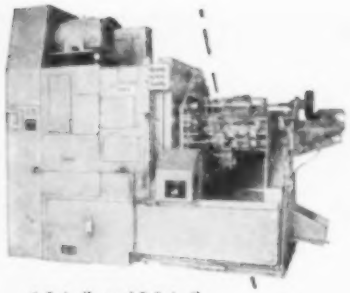

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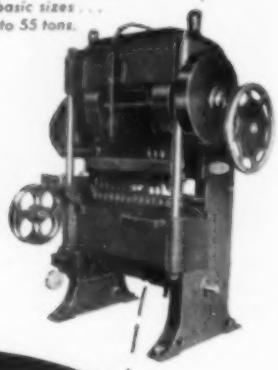

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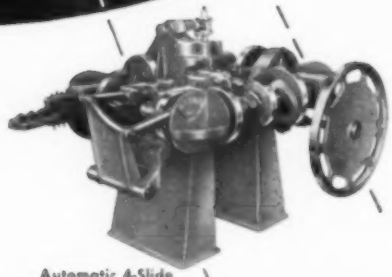

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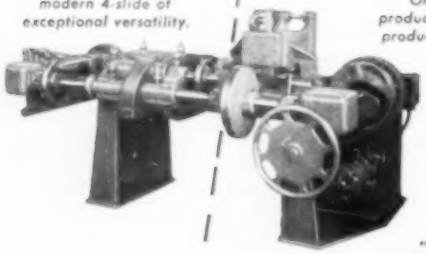

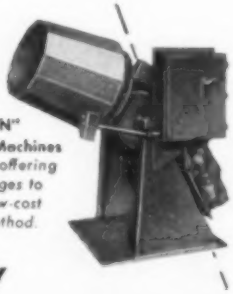

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Puerto Rico (cont'd)

taining is done in the home or at one of the clubs. Even away from San Juan, American colonies are growing rapidly—300 families in and around Ponce, for instance—and as a rule they're extremely well integrated with the Puerto Rican community, although this wasn't always so.

Speaking of the Puerto Ricans, you'll find them a warm, friendly, likeable people who will do anything for you if they like you. And don't judge them all by the ones living in New York, Cleveland and other American cities. The ones you see there are almost all of the laboring class, and because they are in a strange, cold land are like fish out of water. See them in their native habitat and they're an altogether different people.

You'll find that almost all middle and upper-class Puerto Ricans, and they're the ones you'll come into contact with socially, speak English fluently and are a cultured, cosmopolitan people. Their social structure, as in most Latin countries, is built around a very close-knit family group. But they're more than willing to welcome you into their homes and clubs, if you'll meet them halfway.

Too, the people of Puerto Rico particularly welcome those Americans whose children attend the same school as theirs. This is especially true in the outlying areas. In almost all schools, children are taught in both English and Spanish, and the American child quickly becomes bilingual.

There are, however, private schools available which teach only in English, but they are mostly in the larger cities and are fairly expensive, costing from $10 a month up to several hundred dollars a year per child.

BUSINESS-TO-BEACH LIVING

Does the average American like living in Puerto Rico? Yes. It takes a little time to become accustomed to it. Take the case of one American, who wound up in one of the smaller towns. He spent his first couple of weeks looking down his nose at the town and its people. But a month or so later, he dropped in on an American friend who'd been around there for a long time. "You know," he said, "somebody must have cleaned up the streets and the town in the last week or so." No one had, he'd just become used to it.

Hardest hurdle for most Americans to get over is the guilt complex. This usually attacks the U S businessman

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Puerto Rico (cont'd)

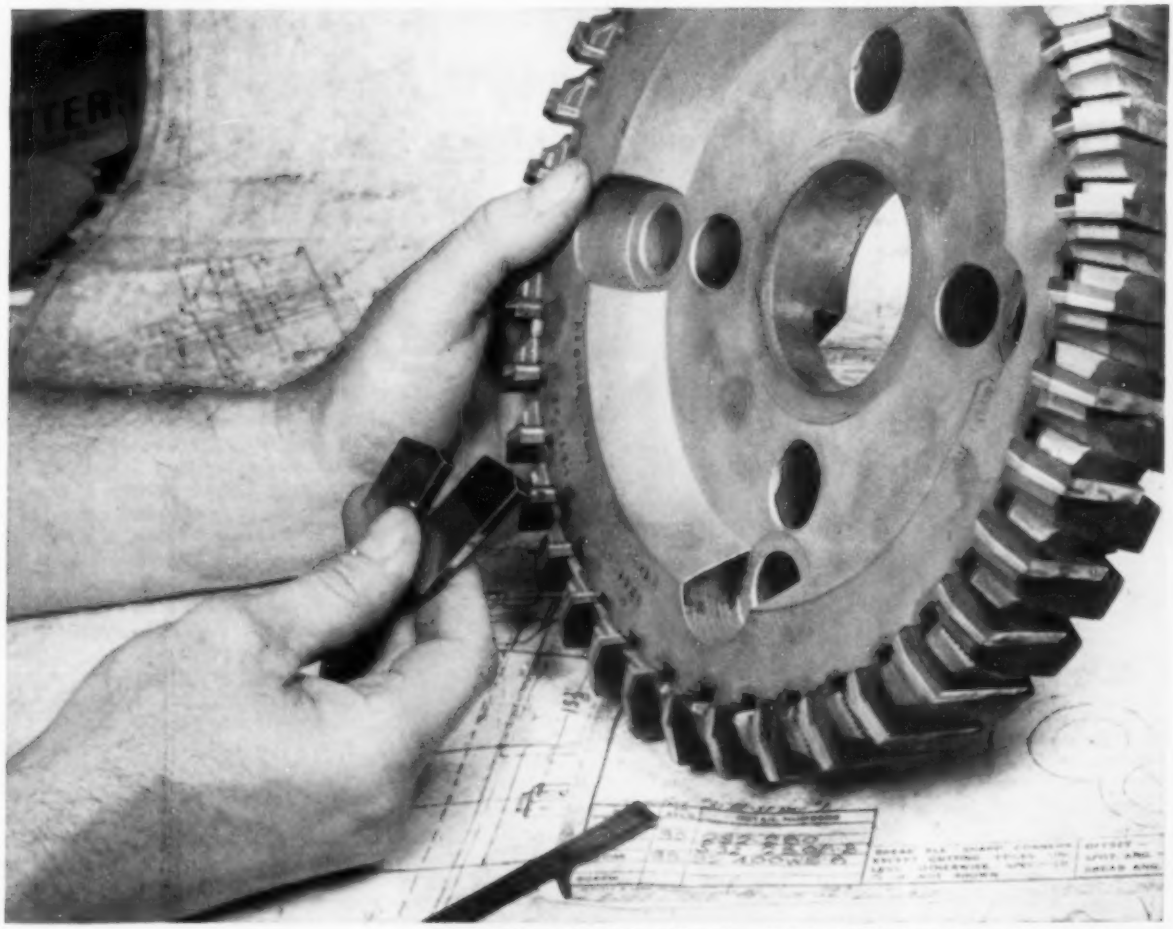
about a month or so after he arrives. Somehow, the industrial executive just can't get over the idea of wandering around in slacks and sport shirt in a sunny, airy plant surrounded by lush tropical foliage. And the idea that he can hop into his car after work and in just a few minutes be basking on a palm-fringed beach is a bit too much for the man who is accustomed to working in drab industrial areas and battling his way home through heavy traffic.

But that's Puerto Rico for you—one of the few places in this world where rewarding work can be combined with gracious living. Its business and social inducements are many, but they are not for everyone.

The government of Puerto Rico welcomes American industry, but it is today in a position to be selective. Again, it does not want failures and toward this end will do everything possible to foster the success of a metalworking branch operation on the island. But it will be the first to discourage the labor exploiters and the shady enterprise, or it will be the first to point out that some types of metalworking are just not suited to the island.

Is Puerto Rico worth looking into for your company? This article has attempted to list the pros and cons of metalworking on the island in a general way. If you want specific information as applied to your own type of operation, write the Economic Development Administration of Puerto Rico, 666 5th Avenue, New York 17, N Y.

"The foreman is a great believer in the power of positive thinking . . . and the super is just as bad!"



Ingersoll Close-Bladed Shear Clear Face Mill for high feed rates on production equipment.

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The answer is "yes" only if a maximum number of parts were produced. If the blades were badly chipped and only used a few times, it was a costly operation.

This is only one of the factors which determine tool costs in your shop.

To develop the lowest milling costs requires a complete study of feed rates, cutting speeds, finish requirements, depth of stock and when to change cutters. It's part of our service to work with you in considering these and other factors before recommending any cutter.

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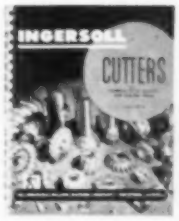

If you do not have a copy of this book, write us and we will send you one. It describes in detail the complete line of Ingersoll inserted blade milling and boring tools. Ask for Catalog 266K.

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Designer wants holes tight, production wants holes larger. "POP" Rivets make both happy.

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Strong, high grip "POP" Rivets need only enough back-up space to provide room for set head.

When buying fasteners, do you figure the *installed costs?* A fastener considered alone may cost very little but be very expensive by the time it's installed and becomes part of a finished product.

"POP" Rivets afford greater flexibility in product design. Often operations can be eliminated, assembly costs reduced, and speed of fastening increased.

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Round Table . . .

APPLICATION FOR TROUBLE

Is it practical to fire a man for falsifying a fact on his employment application blank? If his work is satisfactory, should he be dismissed for a misstatement made when he applied for the job?

FROM YEARS of observation in many shops where the personnel department is too often the most impersonal and cold-blooded department in the plant, I'm inclined to agree with Ed, although I seldom do. In too many cases personnel departments are organized and run by people who may know how to make nice sounding rules that are sure to be resented because they are both unwise and unnecessary.

I'll admit that Potts should have known better than to give a fake name as a former employer. A production department needs men who can produce more than those who may never have slipped a cog as to polite procedure but drag their feet in the production line. While Potts was foolish to fake a former employer's name he may have been the kind of a guy who would enjoy keeping a man out of a job, especially if they had parted on unfriendly terms. There are, unfortunately, too many men who would enjoy doing just that.

Too many questionnaires that I have seen ask questions that are strictly personal and none of the affairs of the employer. I am re-

"The only reason I never take a vacation is that I don't like my employees to take two vacations in the same year."

WHATEVER THE APPLICATION

you can improve your product with

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PRECISION FINISHED PARTS

GRAMIX precision finished parts are improving products in virtually every branch of industry. A pump manufacturer, for instance, may specify a gasoline pump rotor made of GRAMIX and gain a number of advantages.

To begin with, the alloys are carefully blended to meet his individual requirements. The GRAMIX parts are then die-pressed to exact shape, sintered under rigid control and finished to tolerances as close as .0005". (This process, of course, costs far less than machining, forging or casting.) The manufacturer can expect the GRAMIX gasoline pump rotor to do a better job because *all* GRAMIX parts are precision engineered and precision controlled from alloying to finishing.

No matter what the application may be, GRAMIX parts fit specifications exactly. Parts may be impregnated with oil . . . to insure a longer life and a quieter operation: if specified, the GRAMIX parts may be coined and work hardened, even prepared for plating.

The rotor is only one of thousands of applications in which GRAMIX precision parts have proved to be ideal. Just a few of them are shown here, so consider the components of your products . . . there may be several that could be improved . . . with GRAMIX! Products of powder metallurgy you can rely on.

Hardened steel drive sprocket for lawnmower

Iron switch control

Rotor for gasoline pump

Packing gland follower used in hydraulic system

Write today for factual Engineering Bulletin No. 21 . . . we'll send your copy.

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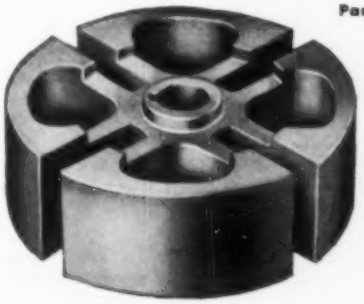

Bronze rotor in high speed fueling unit

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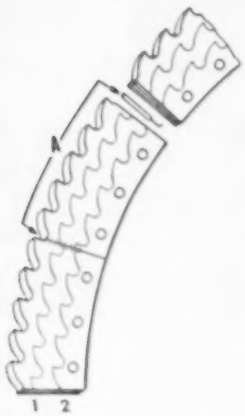

Exclusive patented pin-lock feature provides permanent and perfect alignment. Aligning pins lock segments together. Eliminate aligning rivets of conventional saws which limit sharpening. With rivets, saws can be sharpened only to line 1. With pins, you can sharpen Disston Segmental Saws to line 2—adding 30% to cutting life.

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for ferrous and non-ferrous metals

REDUCE YOUR REPLACEMENT COSTS! Each segment has up to 30% extra life, because sharpening is not limited by conventional aligning rivets. Tough-bodied Disston Segmental Saws—of alloy steel—take the strains and shocks of production cutting with less wear.

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Diameters up to 63" are available. You can have a Disston Segmental Saw bored to your specifications.

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H. K. PORTER COMPANY, INC.
DISSTON DIVISION

minded of a similar case years ago where a man was hired and, as in this case, it was found that he had lied. The personnel man told the foreman to fire him. The foreman, who was being pressed for production, wanted to know why.

"Because his application was a mass of lies. Send him in and I'll tell him so." The foreman went in with him. The man admitted that he had lied. He told them why.

"You asked if I had money in the bank; if I went to church and where; questions that were none of your business. I ought to have asked you if there was money in the bank for my pay check. I've been turned down so many times when I told the truth, that I lied. I knew I could make good if I had a chance. The boss says I have. I don't belong to any church. But I do an honest day's work and earn my money."

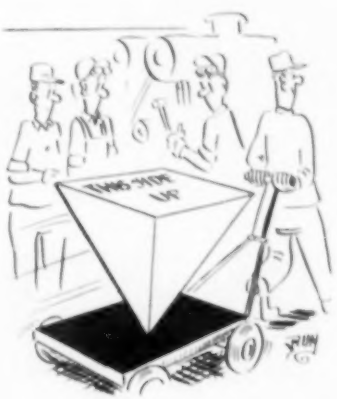
The foreman agreed that he was a good man, said he needed him badly, suggested that the personnel department ask only questions that affected a man's work and his reliability. The man stayed on the job and became a foreman himself later.

We must have questionnaires, but let us limit them to subjects that affect a man's work and his reliability rather than pry into his personal convictions.

Fred H Colvin
Point Pleasant, NJ

POTTS may be a good mechanic but he has obtained his job under false pretenses. He has broken the rules by misrepresenting himself. He has actually "stolen" this job, for had he not misrepresented himself someone else would have the job. The

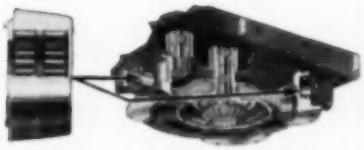
(Continued on page 321)



BEARING TIPS by McGill

GUIDEROL® bearings add efficiency – and sealing – to greater capacity

for THEW LORAIN

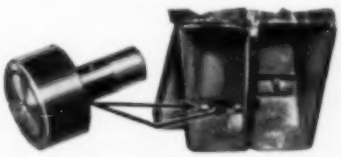


Special GUIDEROL® bearings for turntable rollers

Four of these specially designed turntable rollers support the entire weight of the superstructure plus overhanging work load. They replaced inadequate plain friction rollers to allow for smoother handling of even greater imposed loads with no track wear. Simplified lubrication and longer life reduced maintenance.

Sealed GUIDEROL® bearings for boom peak sheave

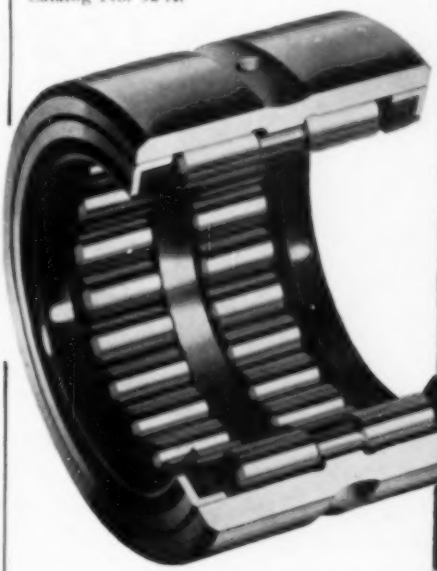
The integral seal design of these extra capacity bearings offers exceptional compactness in the Jib and Boom Peak sheaves. Unit costs are lower because counterboring for separate closures are unnecessary. Retained grease in the protected bearings eliminates climbing or lowering the boom for frequent relubrication.



Sealed CAMROL® Cam Followers for outrigger support

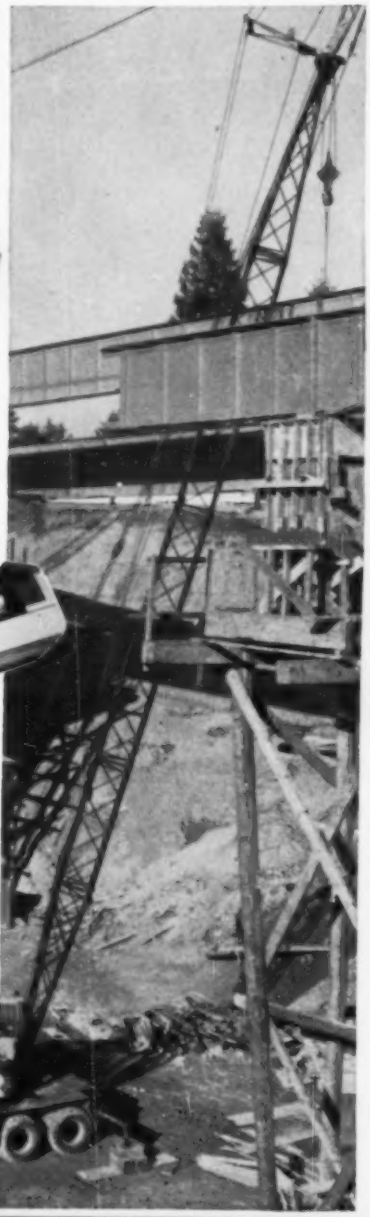
Located in the outrigger carrier channels, these cam follower bearings facilitate extending the supporting outriggers. Subject to heavy working loads, these sealed bearings provide low cost and dependable anti-friction support rollers that stay clean and well lubricated.

McGill bearings have the proven quality, design advantages, extra capacity and precision required to insure the efficiency of needle type roller bearings in all modern machinery. They are specified by Thew Lorain to help make the performance of their giant 75 ton Moto-Crane smooth, rugged and reliable under severe operating conditions. Thew Lorain specifies McGILL bearings in all heavy duty equipment for their outstanding dependability with reduced maintenance. McGill bearings will work equally well for you. Write for Catalog No. 52-A.



Sealed GUIDEROL® bearings for fairlead sheave

Fairlead sheaves at the base of the boom on drag lines and back hoes, etc. need bearings protected from contamination. Effective sealing against ever present dirt and grit materially extends bearing life.



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MULTIROL® GUIDEROL® CAMROL®
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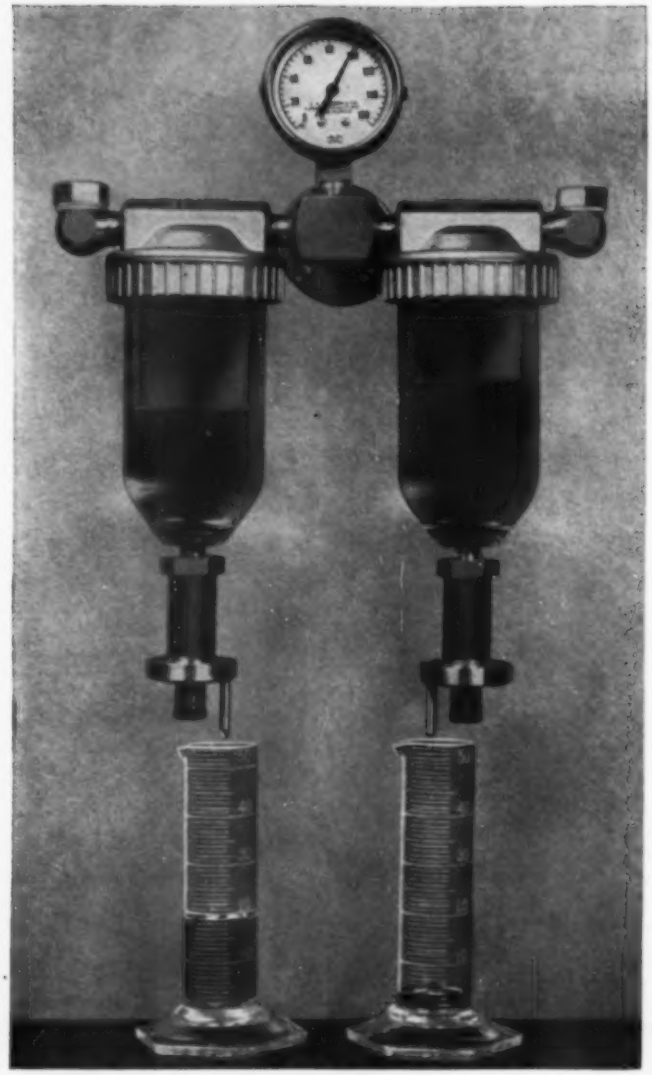


ANTILEAK DEMONSTRATION

Suntac oil in one chamber, your present hydraulic oil of the same viscosity in the other. Both oils are forced out through sintered bronze bearings. In this photograph, pressure of 100 psi caused a straight mineral oil to leak out four times faster than Suntac.

SUNTAC CUTS HYDRAULIC OIL LOSS AS MUCH AS 75%

See this demonstration in your plant

Take about five minutes at your own desk to learn how Suntac® oils stay put in hydraulic systems . . . reduce oil loss through loose joints and worn fittings.

Match Suntac against the hydraulic oil you're now using—see how the exceptional non-gummy antileak characteristics of Suntac can reduce your oil losses as much as 75%. *Some users have even reported savings of 90%.*

Call Your Sun Representative

Have him arrange with a Sun Lubrication Engineer to give you and your staff a private demonstration. For further information on the uses of Suntac in hydraulic systems and in general lubrication, write to SUN OIL COMPANY, Philadelphia 3, Pa., Dept. AM-1.

SUNOCO

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY PHILADELPHIA 3, PA.

© SUN OIL CO., 1957

IN CANADA: SUN OIL COMPANY LIMITED, TORONTO AND MONTREAL

rules of the company clearly state that falsification of an employment application disqualifies the man for employment.

It is easy to see Ed's point of view; he has expended time and effort to train the new man and would like to keep him on. Unfortunately this is a short-term viewpoint and is the result of failure to consider all the factors.

The rules of operation of the plant are basic and fundamental and have been established for the best long-term interests of the organization. A rule or law which is enforced in a weak or half-hearted manner is in some respects worse than no rule at all. If a rule is not going to be enforced it should be amended or repealed.

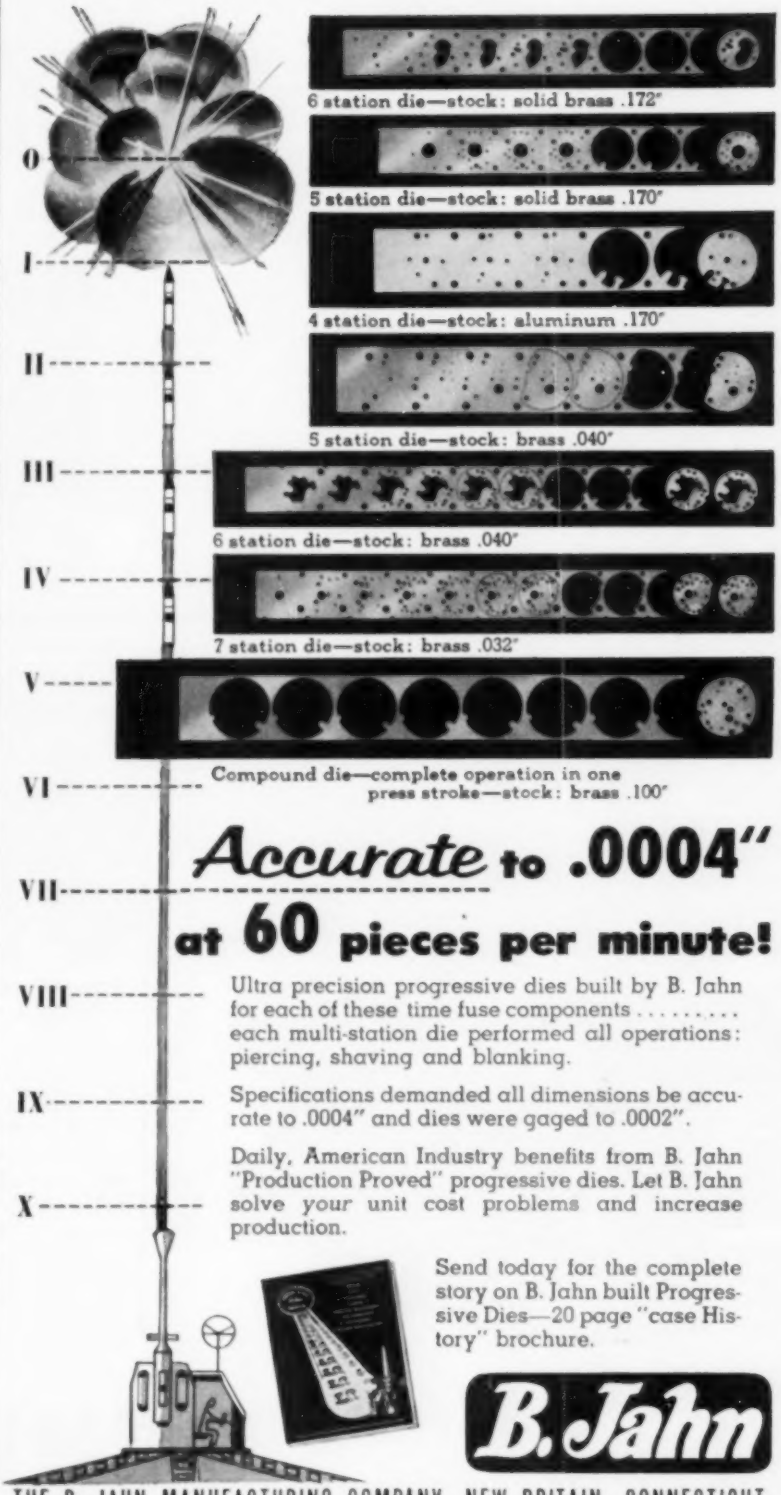
The employee has broken the rule and the personnel department is endeavoring to maintain good discipline by enforcing the rules and applying the prescribed punishment. It would be both unfair and unwise for Ed to attempt to have Potts given special consideration and permitted to stay on in spite of this serious infraction. Such an attempt, whether successful or not, would have an effect on the group. Potts and the other employees would lose some of their respect for the company.

Ed should accept the situation and operate according to the established rules. He should discharge Potts and congratulate the personnel department for doing a good job. This action will make it necessary for him to train a new man, but it is the best course of action for all concerned. It will serve as an encour-

(continued on page 324)

"So who asked for such realism?"

TIME FUSE COMPONENTS



Accurate to .0004"

at 60 pieces per minute!

Ultra precision progressive dies built by B. Jahn for each of these time fuse components . . . . . each multi-station die performed all operations: piercing, shaving and blanking.

Specifications demanded all dimensions be accurate to .0004" and dies were gaged to .0002".

Daily, American Industry benefits from B. Jahn "Production Proved" progressive dies. Let B. Jahn solve *your* unit cost problems and increase production.

Send today for the complete story on B. Jahn built Progressive Dies—20 page "case History" brochure.

B. Jahn

THE B. JAHN MANUFACTURING COMPANY, NEW BRITAIN, CONNECTICUT

See why Tool Engineers call these heavy producers,

"MOST MODERN MACHINES OF THEIR TYPE"

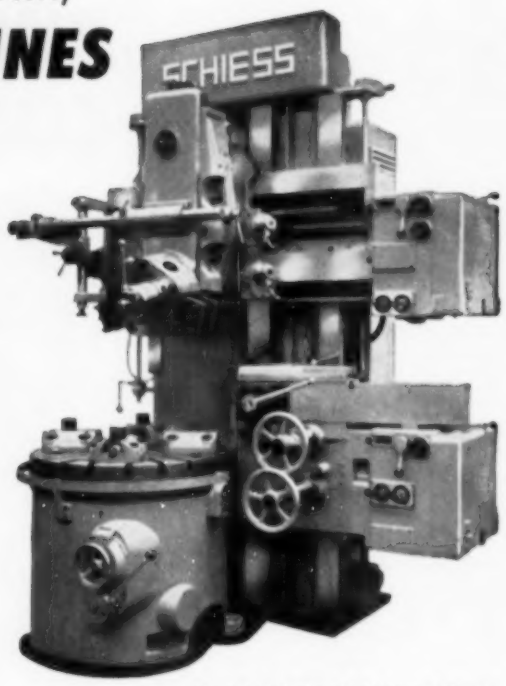
Hydraulic pre-selection of speeds set by handwheel and read on illuminated dial. 16 spindle speeds—ratio 1:50—up to 310 rpm for carbide machining on Model KE 100. Table runs on tapered roller bearings.

Fingertip control for direction of feed and rapid traverse with spring-loaded mono-levers for normal direction plus angular compound feeds. Mono-levers move in same direction as desired feed or traverse movement, simplify correct setting by operator. Specially designed electro-magnetic disc clutches disengage feed instantly with no over-riding or coasting.

Counterbalanced cross rail and side head. Single lever unlocks, raises or lowers, and locks cross rail simultaneously by electro-mechanical controls. *No bolts or nuts to loosen or tighten by hand.*

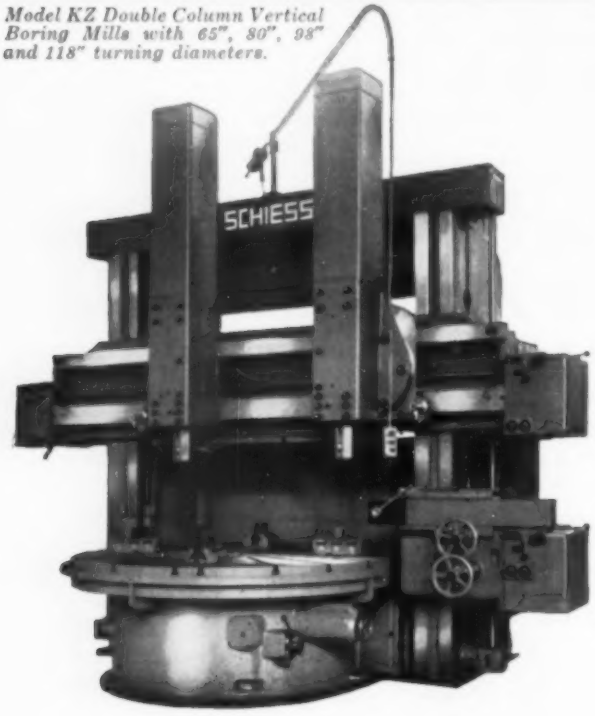
Magnetic dry particle clutch provides vibration-free drive for smooth surface finish. Power is transmitted via belt to clutch from main motor mounted on left side of machine. Instantaneous braking is assured by magnetic dry disc brake.

Copying attachment with electric tracer for use on cross rail or side head.



Model KE Single Column Vertical Turret Lathes with 40", 50" and 65" turning diameters for high-speed carbide machining.

Model KZ Double Column Vertical Boring Mills with 65", 80", 98" and 118" turning diameters.



All operating features of KE Series Vertical Turret Lathes are combined in

SCHIESS KZ DOUBLE COLUMN VERTICAL BORING MILLS, PLUS—

Heads equipped with steel octagon rams can be swiveled—have automatic feed in vertical, horizontal and angular direction and are independent of one another as to amounts and direction of feed. Table operated by three-button pendant control. Standard model KZ Double Column Vertical Boring Mills are available with 65", 80", 98" and 118" turning diameters.

Get to know these products of Europe's largest builder of heavy machine tools. Parts and service are as close as Pittsburgh. An American Schiess engineer will be happy to help you size up these heavy producers for your heavy production needs. Write for catalogs and complete specifications on these and all Schiess KE machines.

engineering division

SCHIESS

AMERICAN SCHIESS CORPORATION

1232 Penn Avenue, Pittsburgh 22, Pa.

this 480 ton giant has 5 heads

WALDRICH SIEGEN

combined planer and milling machine

No need to risk the inaccuracies that come from moving a workpiece weighing up to 100 tons from machine to machine for different operations. One set-up is all you need with this Waldrich Siegen machine. And just think of the tremendous savings in set-up time and costs.

Three milling heads take care of milling, boring and thread cutting operations; another head does planing and grinding; and there's a planer side head, too.

The Waldrich patented tool retracting mechanism in the planer head raises tool in a straight vertical plane after unclamping, repositions tool automatically, then reclamps. Cross rail is clamped hydraulically in exact horizontal position, located by separate electric drive. Built-in optics confirm accurate location.

Rigid, you bet—from top to bottom! Waldrich construction features a base plate crossing under machine and tying columns and bed into one ruggedly rigid unit. And there's a total of 900 h.p. working for you.

Write for all the specs on this mammoth producer. And ask a Waldrich engineer to discuss them in detail—in terms of your production needs.

WALDRICH SIEGEN

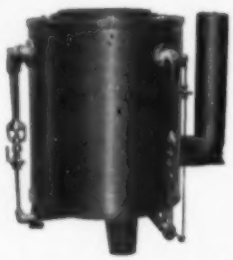
american waldrich mfg. corp.

1232 PENN AVENUE, PITTSBURGH 22, PENNSYLVANIA

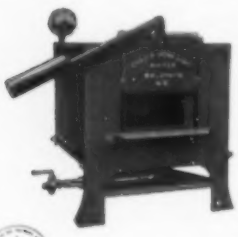
BUZZER
REG. U. S. PAT. OFF.
INDUSTRIAL GAS EQUIPMENT
BURNERS & FURNACES (Heat Treating, Melting, Soldering)

NO BLOWER OR OTHER POWER NEEDED
. . . just connect to gas supply!

Outstanding service since 1911! Each unit, with the famous "BUZZER" Venturi, delivers the hottest, quickest heat attainable without a blower. Full range control of heat and turn-down. Standards or specials available for manufactured, natural or liquefied gas applications.



ATMOSPHERIC POT FURNACES for cyanide, salt bath and lead hardening — temperatures to 1650° F



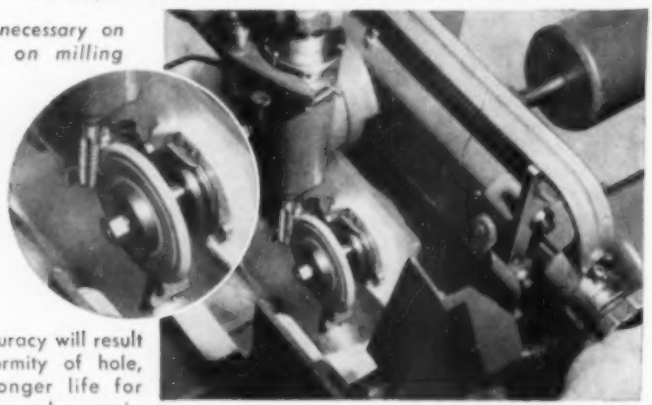
BENCH TYPE OVEN FURNACES for heat treating and pre-heating temperatures to 2000° F

WRITE FOR NEW "BUZZER" CATALOG

CHARLES A. HONES, INC.
121 S. Grand Avenue, Baldwin, L. I., New York • BAldwin 3-1110

NOW — You can control rake or hook angle and insure accurate indexing of cutting edges* of taps with the BLAKE FLUTE GRINDER.

*Just as necessary on taps as on milling cutters.



This accuracy will result in uniformity of hole, much longer life for your taps and a surprising savings in tap costs.

Keep it sharp — Make 1 tap do the work of 6 with The Blake Flute Grinder.

Write for bulletins on BLAKE Tap Sharpening Machines

EDWARD BLAKE COMPANY INC.
MANUFACTURERS OF FLUTE AND CHAMFER GRINDERS
435 CHERRY ST., WEST NEWTON 65, MASS.

Exclusive Distributors of:
Black Diamond Drill Grinders • Surface Finish Standards • Worcester Drill Grinders

agement to the personnel department to continue to enforce the rules. It will also serve to strengthen this and all the other rules under which the organization operates. It will improve the plant morale.

Sing Yen
Brooklyn, NY

MANAGER OR SUPER MECHANIC?

Does a foreman have to know everything about the equipment in his department—to the extent of being able to repair breakdowns—or should he concentrate on being a skilled administrator?

LOOKING back over the years I do not recall a foreman, in my own experience, who was not able to give a good account of himself on any machine in the shop, if the need for such a demonstration arose. Nor do I recall seeing any promotions made that did not take into consideration the factor of mechanical skill. The man promoted did not have to be the top mechanic in the shop, but he did have to convince the higher-ups that he could tackle any job in the shop and hold his end up, production-wise. If he could do that, and was articulate enough to explain clearly what was required when giving out assignments to his fellow-workers, and able to make helpful suggestions when one of the boys ran into a tough one then he was considered to be prime foreman material. Such a man could be taught the finer points of foremanship and in time would become an extremely valuable man.

There is no doubt in my mind that the foreman who knows from experience what the machines in his shop will do and what they won't do, will outperform the so-called "administrator" who has merely a nodding acquaintence with the tools of the machinist trade. Granted that the

"He was showing what would happen if you don't wear safety shoes—and he didn't."

NOW—get the features of larger machine tools costing several times as much

with the New, Improved, Low-Cost

WALKER-TURNER

RADIAL DRILL PRESS

The W-T Radial Drill is made in 24 models with your choice of 4¼" or 6" spindle travel.

Nothing on the market touches it in price or dollar value

Because the drill head moves to the work, this new W-T "Light-Heavyweight" offers unusual versatility and flexibility—provides a fast, efficient means for drilling a number of holes in heavy or bulky pieces, with a minimum of set-up time.

The ram has a big 18" travel radius which allows drilling to the center of a 62" circle; the head, ram and cradle swivel 360° around the column for drilling anywhere on the table or for drilling large pieces that must be kept on the floor; the head tilts and securely locks 45° right or left; and the built-in ball bearing jack shaft assembly provides 15 speeds from 160 to 8300 rpm.

A demonstration will prove to you why this new Walker-Turner Radial Drill is better than ever before.

USE WALKER-TURNER RADIAL DRILL HEADS, with or without jack shaft assemblies, for flexible automation set-ups and other special applications.

Ask your W-T distributor to show you the many outstanding advantages of this new line of "Light-Heavyweights." He's listed under "Tools" in your telephone directory.

MAIL COUPON FOR COMPLETE DETAILS!

walker turner

WALKER-TURNER
Division of Rockwell Manufacturing Co.
Dept. WA21, 400 N. Lexington Ave., Pittsburgh 8, Pa.

ROCKWELL

☐ Please send name of my Walker-Turner Distributor.
☐ Please send new, complete catalog on Walker-Turner Radial Drills.

Name_____

Address_____

City_____ Zone_____ State_____

Platers find many uses for chelating *cleaner

*Chelating (pronounced key-lating) cleaners convert metallic salts and oxides into compounds soluble in water.

By chelating and removing rust or heat scale at the same time that it removes oil, Oakite Rustripper combines pickling and alkaline cleaning into one operation. It also avoids disadvantages of acid pickling, such as hydrogen embrittlement and etching of machined surfaces.

Platers now use Rustripper for dozens of difficult steel-cleaning jobs. Here are some examples reported in recent weeks:

CALIFORNIA: "Rustripper has ended pickling damage such as embrittlement." (Removing oil and light rust from machined landing gears before cadmium plating.)

NEW YORK: "Now saving about $10.40 per day on removing rust and scale and producing brighter plate." (Rustripper, added to reverse current cleaner in automatic plating machine, has eliminated separate pickling of wire towel racks before nickel and chrome plating.)

INDIANA: "Rustripper is the best barrel compound we ever used for this job." (Removing tough heat treat scale from steel screws.) "Total cleaning and zinc plating time has been cut in half."

NEW JERSEY: "Only two cleaning rejects in first 15,000 parts plated." (After Rustripper was added to reverse current cleaner in automatic plater to eliminate smut from tubular steel furniture.)

NEW YORK: "Had trouble with light rust on business machine parts before cadmium plating; also with smut left after electrocleaning. Rustripper cured both troubles."

FREE A 14-page illustrated booklet called "*Here's the best shortcut in the field of electroplating*" tells about many ways in which Oakite Rustripper can be of great value in the plating shop. Write to Oakite Products, Inc., 24 Rector St., New York 6, N. Y.

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SPECIALIZED INDUSTRIAL CLEANING
MATERIALS · METHODS · SERVICE
SCIENCE

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machine shop has become a more complex organization than ever before, and the foreman has had more paper work thrust upon him, he still has to be mechanic enough to go into the shop and talk to the men in the language they understand, and evaluate for himself what kind of job they are doing and whether or not it can be improved upon.

The man in the shop today who runs a machine or works at a bench may have been exposed to more education than his forebears, but in one basic characteristic he remains the same—he is inclined to be suspicious of the white-collar guy whose practical experience of machines has been lacking.

They don't expect the foreman to be a super-mechanic—in fact I don't believe such a superior being exists—but they do expect a man in the capacity of a supervisor to have the type of know-how that can only be acquired by batting it out on the machine. The foreman who can reach back into his own experience and remember when he had a bad day at the machine—one of those days when it didn't pay to get up in the morning—is more likely to lend a sympathetic ear than the "administrator" to whom Joe Doaks on Lathe No. 19 is the guy whose day's production went down.

So far as administration goes, the foreman of today who keeps production running smoothly with the minimum of friction must of necessity possess administrative ability to a marked degree. When you add to this the ability to handle men and machines acquired through years of practical experience you have a combination that very few "unskilled administrators" can approach—let alone surpass.

Robert S Alexander
Glastonbury, Conn

"Yes dear, he's doing it all wrong but just try to enjoy the show!"

NAMES IN THE NEWS...

Swan E Bergstrom, executive vice president of the Cincinnati Milling Machine Co, has been elected a member of the Research Fund Committee of the American Society of Tool Engineers.

Sergio E Vige (above) has been named head of the recently formed Machine Tool Division of Olivetti Corp of America. **Robert A Blum,** formerly associated with DoAll Co, will assist Mr Vige in sales and service facilities of the new division, located in Long Island City

Marvin E Waspe has been promoted to assistant plant manager of the Cincinnati division of Bendix Aviation Corp. He moves up from the post of manager of quality control.

Howard W Brandt has been appointed general manager of the Kalamazoo Division of New York Air Brake Co. Mr Brandt, who recently joined the division as assistant general manager, had previously been general manager of the Rochester Division of General Motors Corp.

Thomas J Manning has been appointed plant manager of the new Cutler-Hammer plant now under construction at Lincoln, Ill. He has been serving as superintendent of the electrical firm's New York Works.

Robert S Rosenast has been appointed production manager for Beckman Instruments' Systems Division at Anaheim, Calif. He was previously production manager for the Clary Corp, San Gabriel, Calif.

Paul Boggs, vice president, sales, of Electrolux Corp, New York, has been elected president to succeed **Walter Dietz,** who has retired but will continue to serve as a consultant. **George Holmen,** vice presi-

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Birmingham
Hinkle Supply Co., Inc.—Phone: 4-4541
CALIFORNIA
Los Angeles
Meyer Sheet Metal Mchry. Co.—VAn Dyke 1477
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Harron, Rickard & McCone Co.—ATwater 2-2202
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Atlanta
Allison Mchry. Co.—JAckson 4-1741
INDIANA
Indianapolis
E. L. Humston Co., Inc.—WAlnut 5-9691
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Bonaparte
Corry's Machine & Tool Co.—Phone: 112
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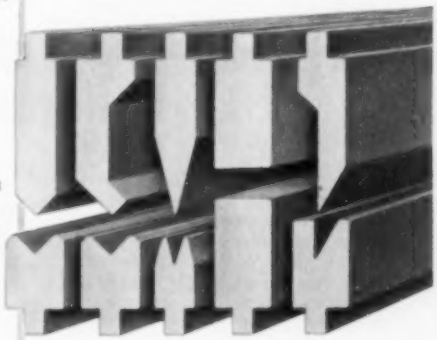
Off-the-shelf DELIVERY



CHICAGO®
*Induction Hardened** PRESS BRAKE DIES

This organization of local distributors offers immediate delivery on many CHICAGO *induction hardened* press brake dies. These stock dies are economical, and the quick delivery saves time in tooling. They are available in any length from 4 to 12 feet in increments of 2 feet.

Stock dies are used for a surprisingly large variety of bending operations. And, with CHICAGO *induction hardened* dies you get bonus performance and increased die life at no extra cost. Remember, these dies can be used in any make or size of standard press brake.

On your needs for press brake dies, call your nearest distributor listed here. With Bulletin D-457 you can order by number. Ask for a copy.

*Induction hardening is a special, high-frequency process used to harden the wear surfaces of CHICAGO dies. Field reports on CHICAGO *induction hardened* dies show up to ten times longer life than conventional press brake dies.

CHICAGO DREIS & KRUMP

Press Brakes, Press Brake Dies
Straight-Side-Type Presses

Hand and Power Bending Brakes
Special Metal-Forming Machines

DREIS & KRUMP MANUFACTURING CO.
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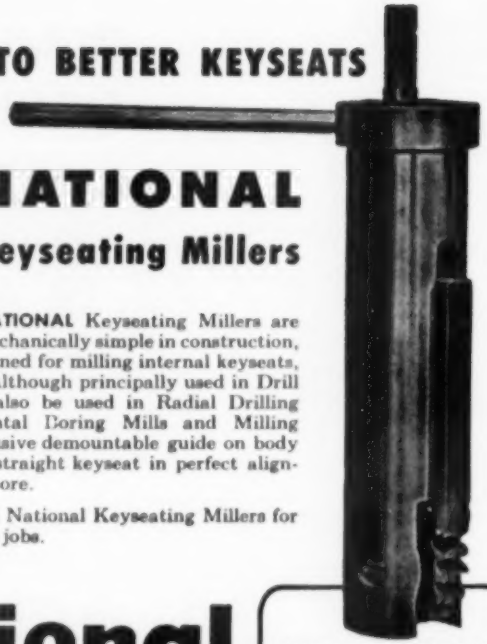
THE KEY TO BETTER KEYSEATS



NATIONAL
Keyseating Millers

NATIONAL Keyseating Millers are mechanically simple in construction, sturdily built, designed for milling internal keyseats, faster and better. Although principally used in Drill Presses they can also be used in Radial Drilling Machines, Horizontal Boring Mills and Milling Machines. An exclusive demountable guide on body of Miller assures a straight keyseat in perfect alignment with axis of bore.

You can depend on National Keyseating Millers for all your keyseating jobs.

national
MACHINE TOOL CO.
CINCINNATI 22, OHIO

WRITE TODAY
for Catalog No. 17
complete, handy size

IBM AUTOMATES WITH POWRLOCK!

In the International Business Machine Corp., Endicott, N. Y., plant, PowRlock air hydraulic setup clamps have been used to automate this milling fixture. A touch of the control now opens and closes the same fixture which previously was tightened and loosened by using a socket wrench on two manual clamps. The results are much faster loading, less operator fatigue, and elimination of waste labor. PowRlock setup clamps are the first step to inexpensive automation. They install easily on most existing fixtures, lock instantly at 1 to 16 different locations, and completely eliminate manual clamping. Find out how they can make men and machines more productive in your plant!

Attach this ad to your letterhead for free demonstration or literature!

WILTON TOOL MFG. CO., INC.
DEPT. AM-1-27, SCHILLER PARK, ILLINOIS
Wilton Vises Are Sold By Leading Distributors Everywhere

dent, finance, has been named vice chairman of the board and chief executive officer of the corporation. **G E Lofgren,** a vice president, has been appointed vice president, manufacturing. He takes over the duties of **A F Murray,** who will act as consultant.

John G Booth, has been named general manager of Minneapolis-Honeywell Regulator Co's Davies Laboratories Division, maker of data-processing, high speed recording, and reproducing systems. He succeeds **Gomer L Davies,** founder of the Beltsville, Md, firm acquired by M-H in 1956. Mr Booth, formerly manager of the Industrial Division's Systems Engineering department, is succeeded there by **John O'Hara.**

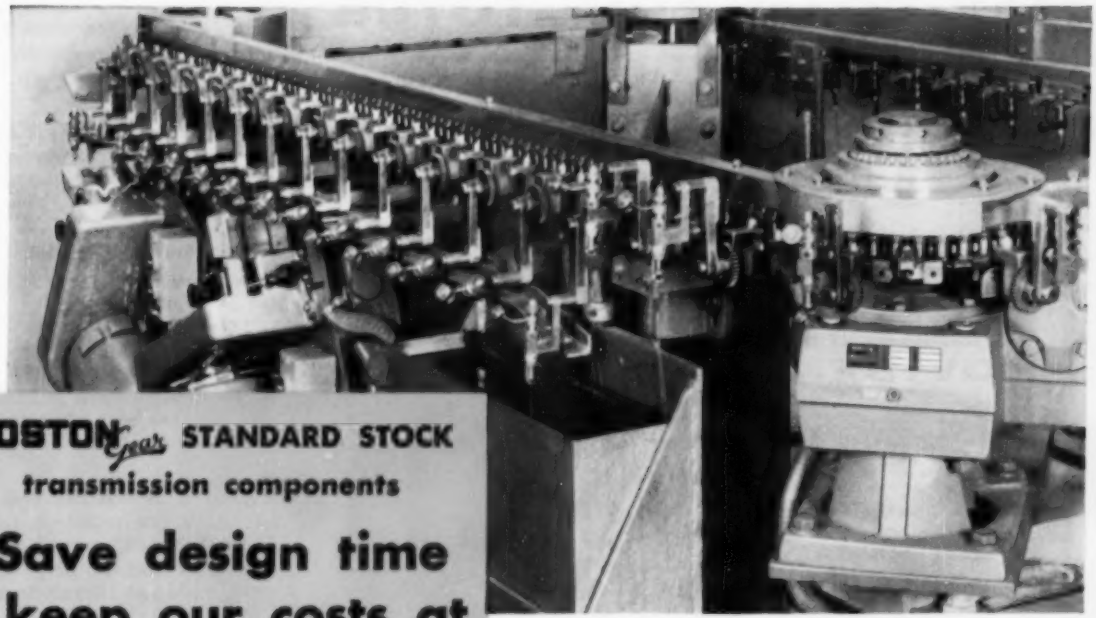
John J Morrissey has been named general manager of General Drop Forge Corp, Buffalo subsidiary of Dana Corp. He was formerly assistant chief industrial engineer at Wyman Gordon Co, Harvey, Ill

Emmett N Shutts, assistant general sales manager of Hartford Steel Ball Co, West Hartford, Conn, has been elected vice president, sales.

Philip DiFalco has joined LeMaire Tool & Manufacturing Co, Dearborn, Mich, manufacturer of special machines, as chief engineer. He was formerly chief engineer at Spartan Design, Inc.

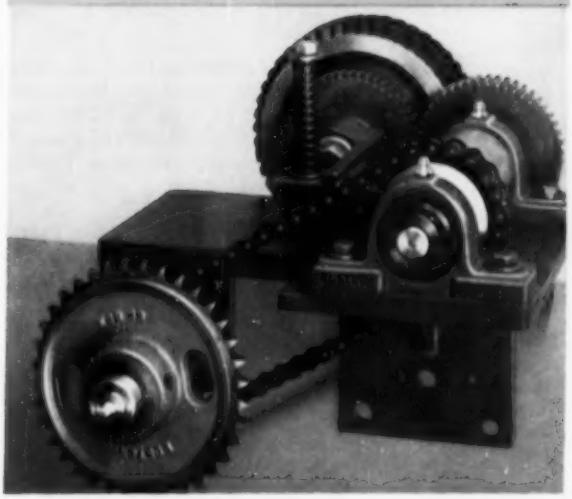
L R Hawkins, pioneer in the machine tool direct selling field on the Pacific Coast, has retired after 48 years of continuous service with Warner & Swasey Co, Cleveland. He has been west coast district sales manager since 1929.

C W Shafer, vice president, production, Beaver Pipe Tools, Inc, Warren, Ohio, has retired after 47 years of service with the company which makes pipe and bolt cutting and threading tools and machines, and



BOSTON Gear STANDARD STOCK
transmission components

"Save design time ...keep our costs at lowest level"



THIS SPECIAL MACHINE, *(above)* is built by the Eraser Co., Inc., for automatically stripping and soldering fuse plug lead wires. It requires the highest standards of precision and performance in all components. Assembly includes BOSTON gears, rack, pillow blocks, pulleys, sheaves, and bushings, — also the BOSTON Ratiomotor shown at the right. Manufacturer says — "In designing special machines, we use standard stock parts wherever possible. They save design time and keep our manufacturing costs at the lowest possible level."

THIS DRIVE for a rotary nylon bristle brush *(left)* is a component of an over-feed device for tentering frames made by Marshall & Williams Corp. This manufacturer of textile finishing equipment knows the many advantages of "Design around BOSTON Gear". The standard gears *(laminated phenolic)*, sprockets, chain, and pillow blocks used are all supplied from local Distributor's stock.

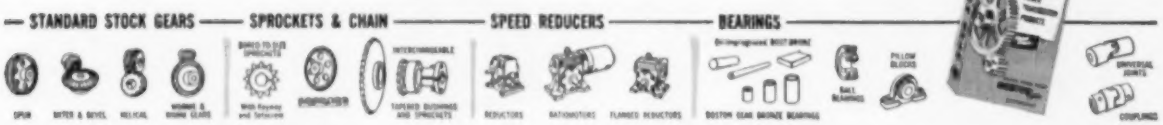
Design around BOSTON Gear
from simple drives to full automation —
— STANDARDIZATION PAYS —®

BOSTON Gear now offers more products than ever to meet any drive need, quickly obtainable "off-the-shelf" from local stocks. Your BOSTON Gear Distributor will help you simplify planning, and show you how to get the maximum benefits from standardization — in lower costs, in easier maintenance, in simplified servicing. Boston Gear Works, 60 Hayward Street, Quincy 71, Mass.

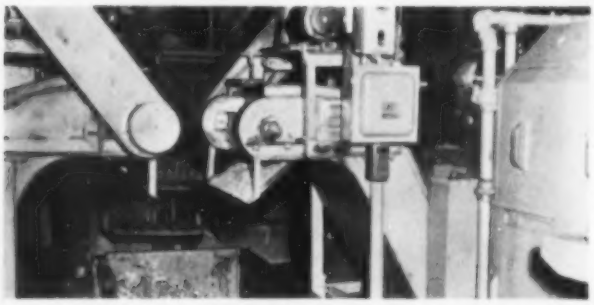
CALL YOUR BOSTON Gear DISTRIBUTOR

For nearest Distributor LOOK UNDER "GEARS" in the 'Yellow Pages'

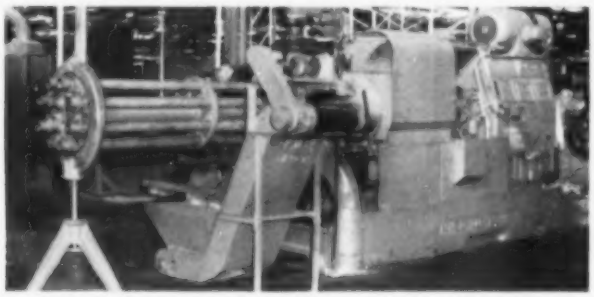
7124 STANDARDIZED PRODUCTS
OFF-THE-SHELF — AT FACTORY PRICES



MAY-FRAN CHIP-TOTES



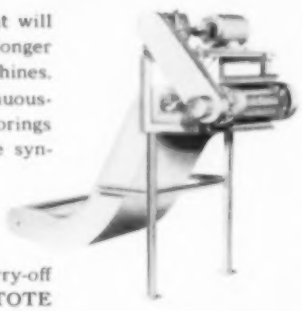
PROVIDE AUTOMATIC AND



CONTINUOUS SCRAP REMOVAL

FROM ALMOST EVERY TYPE AND SIZE OF MACHINE TOOL

Here is a machine tool accessory that will cut production costs, and permit longer "run" times for your automatic machines. The MAY-FRAN CHIP-TOTE continuously removes the chips, turnings and borings from machines. The conveyor can be synchronized with the metal removing capacity of the machine. Scrap is channeled onto the CHIP-TOTE belt, carried clear of the machine for discharge into tote box or carry-off conveyor system. There is a CHIP-TOTE for every machine tool.



MAY-FRAN ENGINEERING, INC.

For complete facts, write today and ask for MF-640.

7845-MF 1677 Clarkstone Road • Cleveland 12, Ohio

abrasive cutting machines. **E J Cassella** has been promoted from assistant plant manager to plant manager.

William E Daily has been appointed sales manager of the new steel tube division of Southern Fabricating Co, Sheffield, Ala.

J E Workman, vice president, sales, of Latrobe Steel Co, Latrobe, Penna, has been appointed to the new post of executive vice president. **Howard M Givens,** southern regional manager, succeeds Mr Workman, and **W G Dahl,** eastern regional sales manager, has been promoted to general sales manager.

Robert M Powell has been named executive vice president, sales, and **James L Roach,** general sales manager of Wyman-Gordon Co, Detroit automotive and aircraft forging specialist.

David F Shaw has been appointed vice president of Kaiser Engineers, Oakland, Calif, division of Henry J Kaiser Co.

Edward W Moffitt has been appointed general manager of the Bridgeport, Conn, plant of Heppenstall Co, steel forgings manufacturer. He was previously manager of sales production and metallurgy.

John B Kendall, formerly in charge of Ford Motor Co's Chicago Stamping Plant, has joined Delta Welder Corp, Detroit, as vice president.

J L Pringle, assistant to the general superintendent at Bethlehem Pacific Coast Steel Corp's San Francisco shipyard, has been appointed superintendent of shops.

Wladimir A Reichel has been appointed senior vice president of Norden-Ketay Corp, Stamford, Conn. He was previously senior vice president, engineering, of General Precision Equipment Corp.

Norman C Helwig has been elected vice president of Kaar Engineering Corp, Palo Alto, Calif. Mr Helwig, who has been general manager of the electronics firm since 1952, will continue in that post.

Alfred C Ekberg has been named district manager at the Detroit office of Pratt & Whitney Co, West Hartford, Conn. He succeeds **Samuel J Matchett** who is retiring.

A 3M Case History Report

STEEL POLISHING SPEEDED 10–15% WITH "PG" WHEELS

MANUFACTURER: Heintz Division of Kelsey-Hayes Co.

ADDRESS: Philadelphia, Pennsylvania.

PRODUCT MANUFACTURED: Automotive Metal Stampings.

3M ABRASIVE USED: "PG" Wheels.

HOW 3M ABRASIVES ARE USED: Finishing operation. Remove die marks, scratches, and other forming defects from cold-rolled carbon steel auto grille bars, prior to plating.

OPERATIONAL DATA ON 3M METHOD: Grit 220 Resin Bond Cloth "PG" Wheel on double-spindle floor lathe with buff-wheel.

OPERATIONAL DATA ON PREVIOUS METHOD: 2-station, 3-step method. 1st, #120 disc; 2nd, set-up wheel; 3rd, buff-wheel.

PROVEN ADVANTAGES OF 3M METHOD: Former 3-step operation reduced to 2 steps; "PG" Wheel and Buff. "PG" Wheel leaves no scratches on work piece; speeds production 10-15%.

OTHER 3M ABRASIVE PRODUCTS IN USE: "Three-M-ite" Resin Bond Cloth Portable "PG" Wheels on hand-grinders are used to remove in-use scratches, other imperfections from dies, without removing them from press. "PG" Wheels replaced hand methods, reduced repair time from 14 hours to 30 minutes.

WANT MORE INFORMATION? Send for free manual, "Modern Metal Finishing with 3M 'PG' Wheels." Write to 3M Co., St. Paul 6, Minn., **Dept. AK-18.**

"PG" Wheels are manufactured in U.S.A. by 3M Company, St. Paul 6, Minn. Export: 99 Park Avenue, New York. Canada: London, Ontario

3M Coated Abrasives

"PG" WHEELS

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

BAUSH

2 - WAY INDIVIDUAL LEADSCREW SPINDLE TAPPING MACHINE

with

HYDRAULICALLY OPERATED VERTICAL COLUMN UNIT HAVING A 37 SPINDLE HEAD

BAUSH
MACHINE TOOL CO.
SPRINGFIELD 7, MASSACHUSETTS

One of several units that round out a production line for finshing cylinder heads in a leading automotive plant.

Designed specifically for tapping spark plug holes at exact angles, this unit completes 37 operations at five stations.

Another NEW and interesting machine developed by BAUSH. Send us your production problems—we can do as much for your production lines.

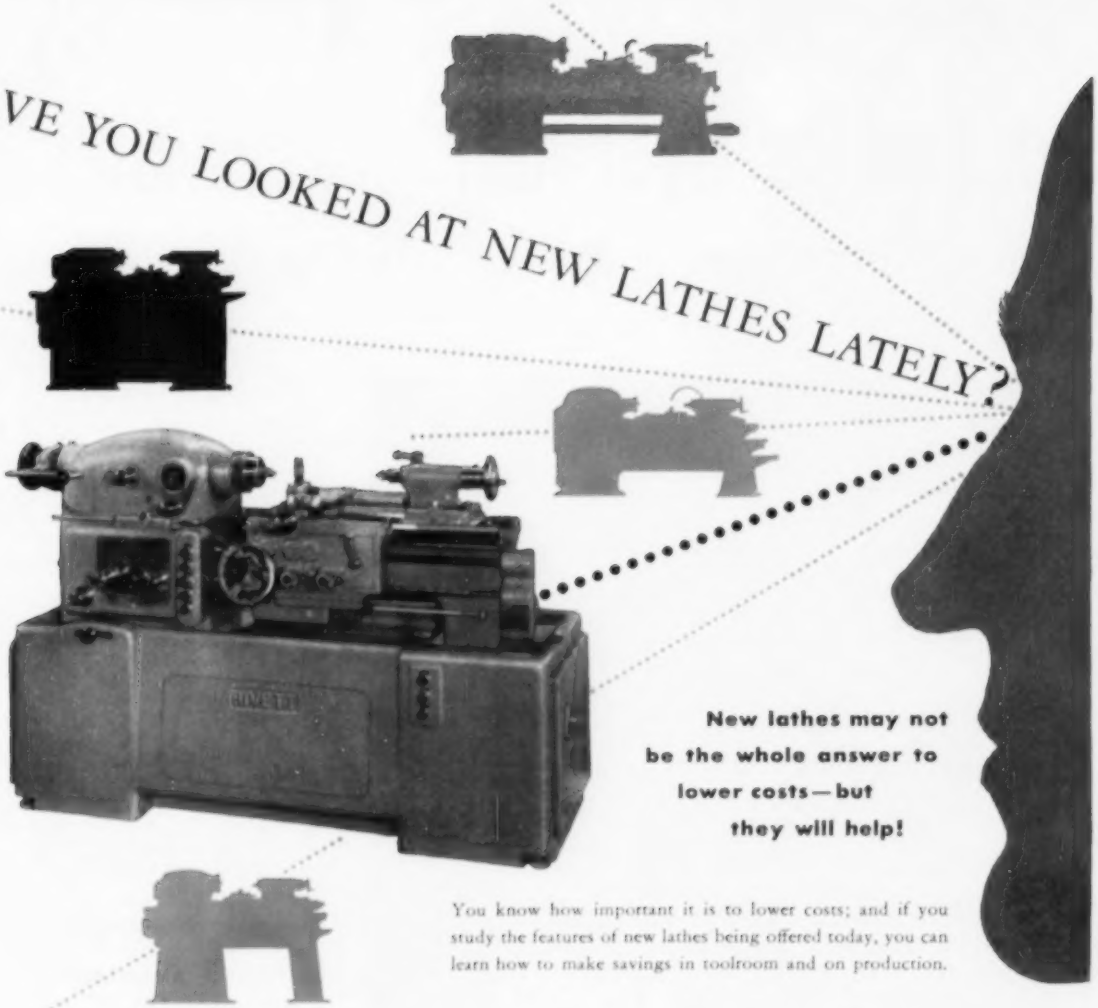
SPECIFICATIONS:

A BAUSH W-7 vertical column is mounted on a heavily constructed welded steel base equipped with chip trough and coolant tank. The 37-Spindle Head is of pot-type construction, and in addition there is a single spindle stationary type Angular Tapping Head. The permanent fixture has 5 stations hydraulically operated and electrically interlocked. Hydraulic Pump has an 18" stroke cylinder. Trabon lubrication is used in unit and mist lubrication is used in tapping.

OPERATION:

Tapping spark plug holes in cylinder head.

HAVE YOU LOOKED AT NEW LATHES LATELY?



New lathes may not be the whole answer to lower costs—but they will help!

You know how important it is to lower costs; and if you study the features of new lathes being offered today, you can learn how to make savings in toolroom and on production.

Rivett offers two lathes for one!

This observation is particularly true if you look at the new Rivett Model 1020S Precision Toolroom Lathe. It features sensitivity for turning tolerances within .0004″; and heavy biting ruggedness for a ¼″ cut at .020″ feed in cold rolled steel. In short, it is an instrument lathe and an engine lathe combined to handle any work within its 12½″ swing and 20″ centers.

26 Features Distinguish Rivett 1020S

The Rivett Model 1020S is head and shoulders above any ordinary lathe. Its design includes 26 individual qualities that substantiate Rivett's reputation for extreme precision and economical production.

Write for free catalog

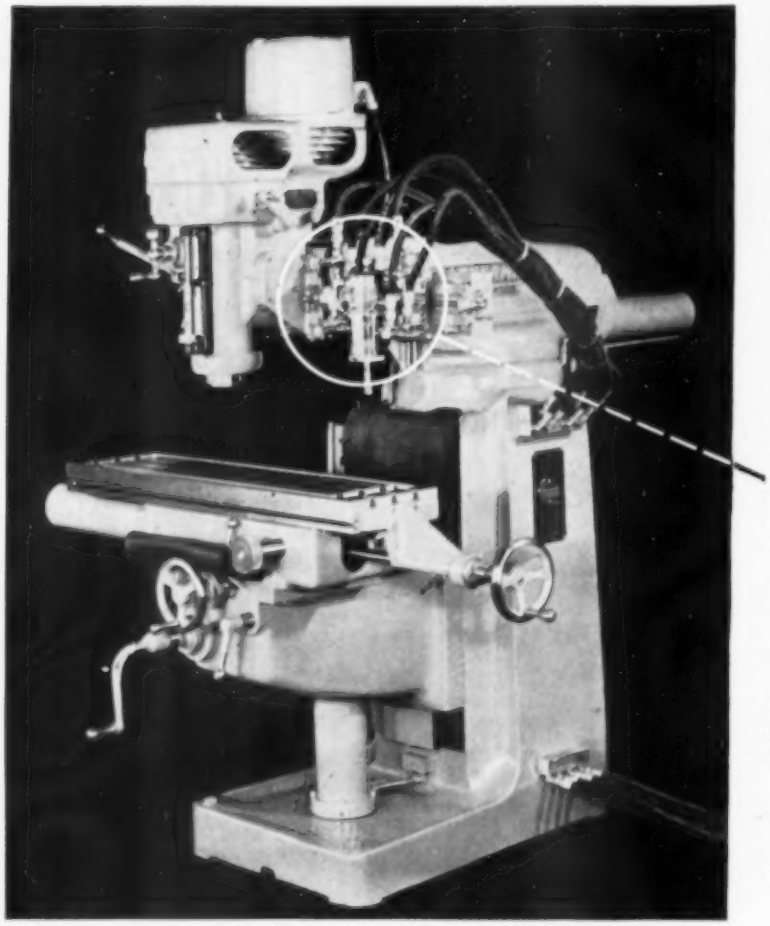
Why not write for the new Rivett Catalog 1020B and read these important 26 features—compare them with the designs of other makes of lathes—and thereby realize what a Rivett can do for your shop in the way of time and money (not to mention how happy it will make any *real* machinist to work with such *real* precision!)

RIVETT

RIVETT LATHE & GRINDER, INC., DEPT. AM-1, BRIGHTON 35, BOSTON, MASS.

Now "Micrometer Accuracy" Applied to Hydraulic Tracer Control

Provides more speed in Production Profiling and Duplicating



Gorton Trace-Master Hydraulic Tracer control is today's best unit for 2- and 3-dimensional duplication, production profiling and work on all types of die forging, die casting, metal stamping, embossing and coining, as well as plastic molds in both ferrous and non-ferrous materials.

GORTON

"TRACE MASTER" Supersensitive Hydraulic Control

This master control valve is manufactured to tolerances which are NEW in the field of hydraulics. Working parts are so delicately ground and lapped that they will operate only with a very fine grade of special oil. *Ordinary hydraulic fluids are wholly unsuitable.*

3 MODELS AVAILABLE

180° Vertical Hydraulic Feed to Knee.

360° Cross Hydraulic Feed to Ram and Longitudinal Hydraulic Feed to Table.

3D Hydraulic feed to knee, ram and table for 3-dimensional work.

The above can be furnished with the Gorton 1-22 Mastermil illustrated here or the Gorton 9-J Super-Speed Vertical Mill with single spindle, twin spindles and/or six inch higher column for additional vertical capacity.

Write for complete information contained in bulletin 2771-1501

GORTON

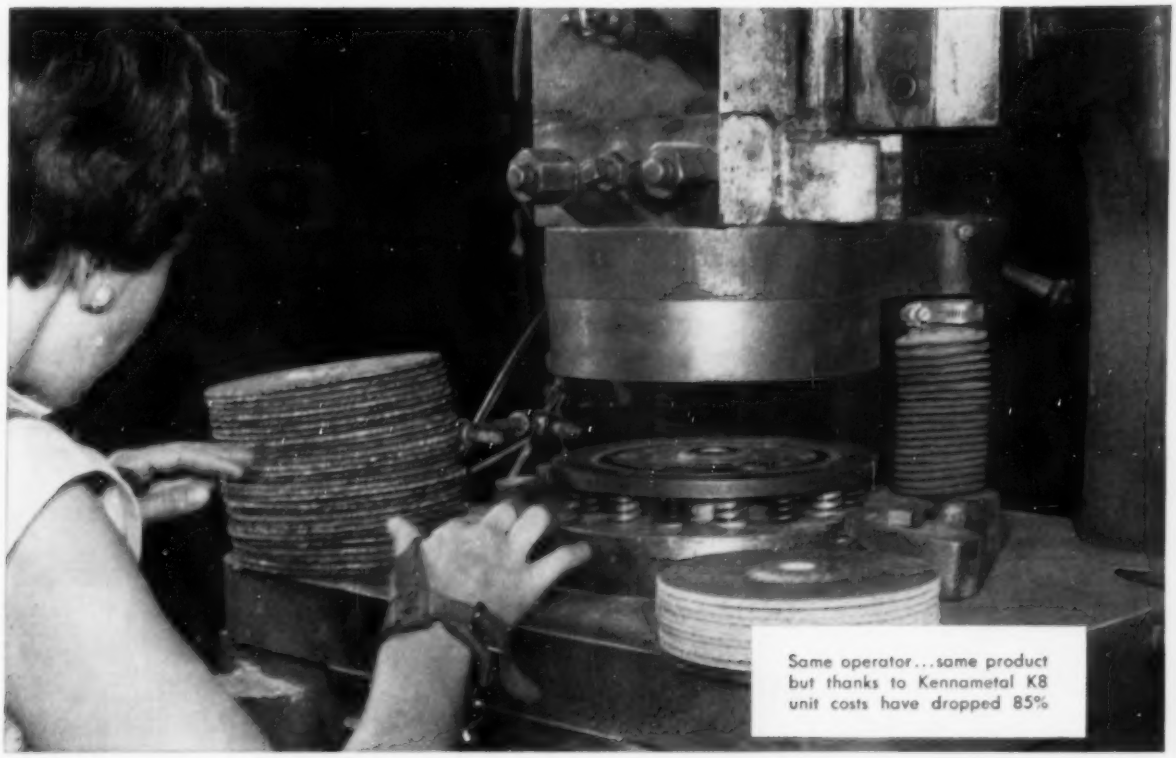
GEORGE GORTON MACHINE CO.

1501 RACINE ST., RACINE, WISCONSIN

SINCE 1893

Tracer-Controlled Pantographs, Duplicators — standard and special . . . Horizontal and Vertical Mills, Swiss-Type Screw Machines, Tool Grinders, Small Tools and Accessories.

A7-1002-1P



Same operator...same product but thanks to Kennametal K8 unit costs have dropped 85%

With KENNAMETAL* Die Grade K8 . . .

Cost of MX® Abrasive Wheels dropped 2.64 cents per unit

Accurately kept production records of The Carborundum Company show that one set of Kennametal Grade K8 punches and die rings outlast *six* sets made from high speed steel. Cost of the punch and die rings, plus setup time and die regrinding time formerly added 3.1 cents per unit. By the introduction of Kennametal Grade K8 punch and die rings, this cost has now dropped to less than one-half cent per unit.

In addition to reducing your unit costs through extended die life and low maintenance, Kennametal Die Grades bring you additional benefits through their ability to hold close tolerances for greater product uniformity.

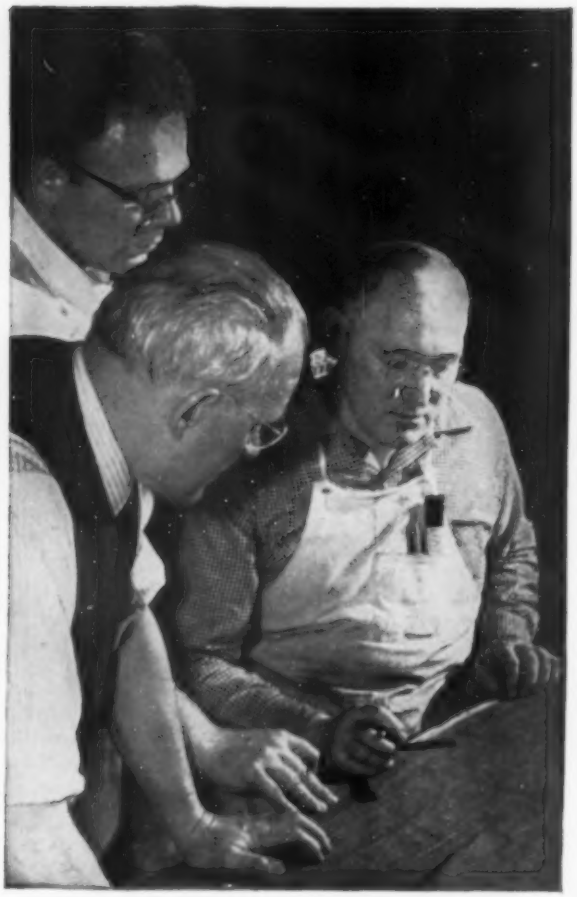
Why not find out what Kennametal can do for the critical wear parts of your operation. A Kennametal Die Engineer will gladly work with you in selecting and applying the Kennametal Grade that best meets your requirements. Get more information on the six grades of Kennametal's "90" series or the three exclusive, non-galling "80" series . . . a total of nine Die Grades developed to meet every die need, including yours. Call your Kennametal Representative, or write KENNAMETAL INC., Latrobe, Penna.

*Trademark

3102

Disassembled die used for blanking and piercing arbor holes in Carborundum's MX abrasive wheels. Kennametal Die Grade K8 is now used for both the piercing punch and the punch ring that forms the outer diameter of the wheel.

INDUSTRY AND KENNAMETAL ...Partners in Progress



it's a job for CDT

Faced with a special tooling job? Stymied by a tough problem? Would 50 years of experience help? Then the logical answer for you is to send it to Columbus Die-Tool! CDT specializes in tools, jigs, fixtures and also special machinery, designed and built to produce your products better, faster, and more economically.

That's why so many of the nation's leading manufacturers avail themselves of the specialized services of Columbus Die-Tool. Perhaps CDT can solve your tooling problem and help you make your product . . . better for less.

Columbus Die-Tool
AND MACHINE COMPANY

P. O. BOX 750 • COLUMBUS, OHIO
ESTABLISHED 1906

Designers and manufacturers of JIGS • FIXTURES • SPECIAL TOOLS • UNITS FOR MACHINE TOOLS • also Builders of Machine Tools Complete

EXTRA POWERFUL

For more profitable production

STONE

M-100 and M-150

Chop Stroke Cut-Off Machines

MODEL M-100

With geared-in-head 10-H.P., TEFC, ball bearing, induction type motor. Self-centering vise mounted on swivel plate, calibrated for instant change-over to angular cutting up to 46°. Oil mist spray optional. (Model M-150 driven by 15 H.P. motor).

Stone Models M-100 and M-150 cut with outstanding power, speed and accuracy. Operated manually, they cut at a rate of 2 to 4 seconds per square inch, producing a mill-like finish to a tolerance of ±.005" in ferrous and non-ferrous metals of many shapes, lengths and diameters. The exclusive Stone geared-in-head motor maintains maximum power at the cutting edge.

Rugged performance and powerful construction make it possible for Stone Models M-100 and M-150 to perform continuously, day and night, with the same, consistent output of work.

Write today for complete information on the Model M-100 and M-150 and other cut-off machines manufactured by Stone. 15 Models available in 3½ to 20 H.P., manual, "semi" or fully automatic operation.

"represented in every major industry throughout the world"

STONE MACHINERY COMPANY, INC.

151 Fayette St., Manlius, N.Y.

for every wheel that turns in industry

Lubricating oils, cutting oils, multi-purpose greases, greases for spraying . . . whatever your needs, Atlantic has the lubricant to help you. Atlantic lubricants insure maximum lubricating performance at low cost for every job in the plant . . . for every wheel that turns in industry.

For lubricating products that fit your specific needs, or for expert assistance with your lubricating problems, write or wire any of these Atlantic offices.

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ATLANTIC

LUBRICANTS · WAXES
PROCESS PRODUCTS

Don Oberg tells why the Moore Jig Grinder is an absolute must in any good die shop

by **DON E. OBERG**
General Manager
Oberg Manufacturing Co., Inc.
Tarentum, Pa.
Largest Manufacturer of
Carbide Dies

"One of the most important features of an Oberg-built die is guaranteed complete and positive interchangeability of parts throughout the life of the die. *This feature would be practically impossible without the application of Moore Jig Grinders.*

"With Moore Jig Grinders we can accurately locate holes with relation to each other as well as size holes to extreme accuracies. We can efficiently grind contours on carbide die sections which would be impractical by almost any other method. Back taper on contoured carbide die sections and piercing holes can be readily generated on Moore Jig Grinders.

"We feel it would be *practically impossible* to produce the high precision carbide dies required by industry today without the Moore Jig Grinder. *In our opinion it is an absolute must in any better-than-average die shop.*"

As Mr. Oberg points out, the Moore Jig Grinder has no equal on many essential toolroom operations. If you would like a bulletin describing some of the features that make this machine so outstanding, just drop us a line.

MOORE SPECIAL TOOL COMPANY, INC.
738 Union Avenue, Bridgeport 7, Connecticut

"The things we like best about our four Moore Jig Grinders are the sturdiness and dependable long-life accuracy built into them. Ours are used ten hours or more every day. Even with this high activity, we have found no apparent inaccuracies from our oldest to our newest machine."

HOLES, CONTOURS AND SURFACES, Moore's authoritative book, tells how to produce tools, dies and precision parts *the modern way*. 424 pages, 495 illustrations. $5 in U. S. A., $6 elsewhere.

ADD MOORE TOOLS TO YOUR TOOLROOM

JIG BORERS • JIG GRINDERS • PANTOGRAPH WHEEL DRESSERS • PRECISION ROTARY TABLES • HOLE LOCATION ACCESSORIES

NICE BALL BEARING Company

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TEL. BALDWIN 3-6000 · CABLE ADDRESS "NICE-BALL" PHILADELPHIA

IMPORTANT NOTICE!

NICE ANNOUNCES ITS APPOINTMENT AS THE SOLE LICENSEE IN THE UNITED STATES FOR THE MANUFACTURE AND SALE OF THE MOST AMAZING BEARING IT HAS EVER WITNESSED. IT FEATURES A SOLID INNER AND SOLID OUTER RACEWAY, WITH DEEP, UNBROKEN BALL GROOVES *AND A FULL COMPLEMENT* OF BALLS. A BALL SEPARATOR MAY BE INCORPORATED, BUT IN EITHER CASE, THERE IS NO LOADING SLOT OR SPLIT RACE TO ADMIT THE BALLS TO THE BEARING. ITS ENDURANCE, IN OUR TESTS AND EXPERIENCE, IS GREATER THAN ANY SIMILAR BEARING EVER WITNESSED. NEW MANUFACTURING METHODS PROVIDE CLOSER TOLERANCES, CLOSER RADIAL AND AXIAL CLEARANCES AND IMPROVED FINISH. IT WILL BE SOLD IN ALL CASES AT VERY ATTRACTIVE PRICES, USUALLY WITHOUT COST PENALTY AS COMPARED WITH COMPETITIVE BEARINGS OF COMMERCIAL QUALITY, YET IT WILL BE A SUPERIOR BEARING. PATENTS THROUGHOUT THE WORLD ARE COVERED BY HEIM - *Unibal*®. WE PLAN TO SEE *YOU* SOON — IF WE FAIL TO SEE YOU SOON ENOUGH — WILL YOU PLEASE CALL US?

NICE BALL BEARING COMPANY
DIVISION OF CHANNING CORPORATION
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NICE BALL BEARING COMPANY
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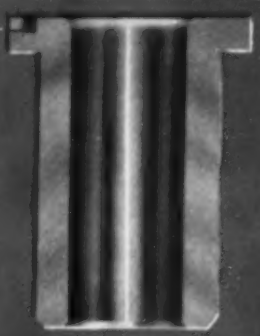
VISIT NICE BOOTH NO. 131, DESIGN ENGINEERING SHOW, CHICAGO, APRIL 14th-17th

you get close tolerance drilling with

UNIVERSAL DRILL BUSHINGS

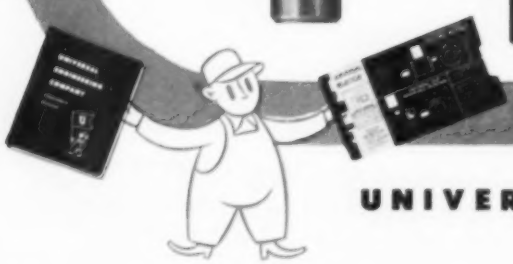
Accurately machined bushings are essential when drilling to close tolerance. UNIVERSAL DRILL BUSHINGS, of finest quality steel, are carefully tested for 100% concentricity and hardness, assuring pin-point accuracy and uniform quality. To prevent tool hang-up and breakage, each bushing has a blended radius on the top inside diameter.

All bores are superfinished. This superfinishing of bushings is important, especially in close tolerance work, because it reduces both tool and bushing wear to a minimum. Knurled head gives a quick, sure grip.



We stock drill bushings in all standard sizes and lengths at each of the following offices—Universal Engineering Sales Co., 1060 Broad St., Newark 2, New Jersey; 5035 Sixth Ave., Kenosha, Wis., and at our home office in Frankenmuth. Contact the nearest office for immediate delivery.

The Universal Drill Bushing Slide Chart gives accurate engineering data for the selection of all types and sizes of drill jig bushings up to 1¾" drill size. You may have one—free—by requesting on your company letterhead. At the same time, get your copy of our new catalog that describes all of UNIVERSAL'S products including chucks, tool holders, boring bars, bushings and index plungers.



UNIVERSAL ENGINEERING COMPANY

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CLEEREMAN

DRILLING MACHINES

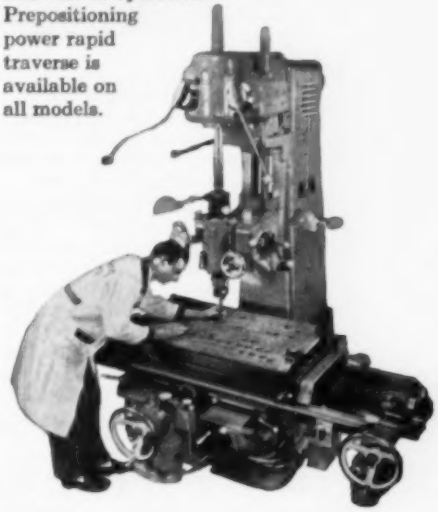
A battery of box column and round column Cleereman Drilling Machines on production work. One of many such installations producing at lower costs with higher production, less operator fatigue and no down time.

LAYOUT DRILLING MACHINE

A modern solution to an old problem. Built for those tool room and manufacturing jobs which do not require the ultra precision of Cleereman Jig Borers. The Cleereman Layout Machine is an economical machine capable of locating within .001″ per foot and drilling, boring, reaming, tapping, etc., with utmost operator ease at a fast rate of production.

JIG BORER

Unexcelled precision for ultra-fine tolerances on highest quality gage, tool, die, jig and fixture work and on "jigless" production. Combines stamina with precision and ease of operation. Prepositioning power rapid traverse is available on all models.



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CLEEREMAN MACHINE TOOL CORP., Green Bay, Wis.

NEW

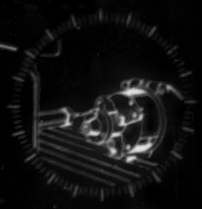
ERICKSON

MASTER SPACER

with No. 0 Timken Bearings

gives increased production and optimum accuracy in

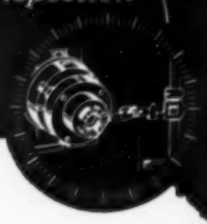
straddle milling



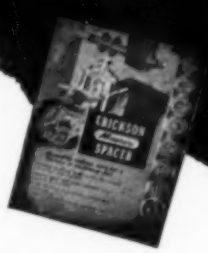
milling

jig drilling with either micrometer or "Jo" block setting

inspection



Write for free catalog "Erickson Master Spacer" today. And at the same time request your copy of Catalog K; you'll find cost-slashing applications for all Erickson holding tools.



The new Erickson Master Spacer quickly and accurately positions work for a wide variety of jobs. This *one* tool can eliminate expensive jigs and fixtures . . . makes it a simple procedure to set up drilling, milling, boring and special machining operations.

The new Erickson Master Spacer, ideal for tool room and production machining, assures outstanding performance under heavy helical cuts and slow feeds. *Indexing accuracy guaranteed within .001-inch cumulative error on a 6-inch diameter circle.* Jig drilling is possible with either micrometer or "Jo" block setting. Timken bearing construction permits work to be trued in position with brake off because spindle alignment remains unchanged.

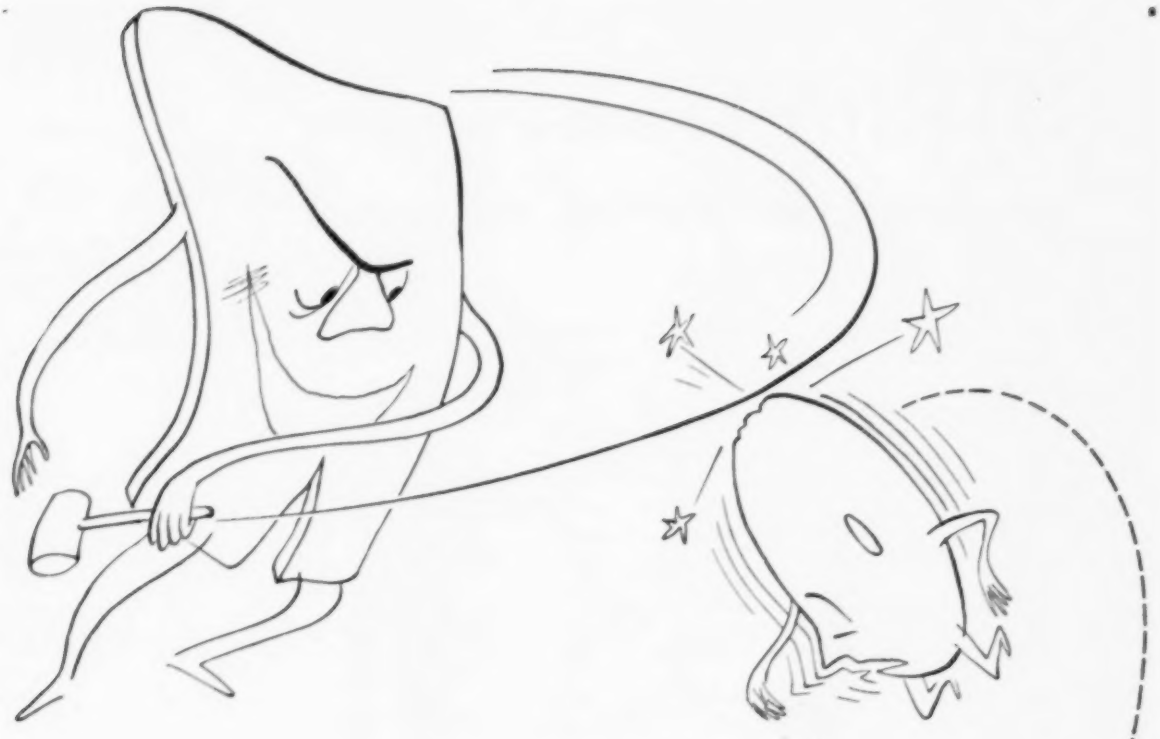
The new Erickson Master Spacer can help you come to grips with your Number One Problem—high production costs. The first step is to get the Erickson story.

AA 3091

ERICKSON TOOL COMPANY

34359-1 Solon Road • Solon, Ohio

COLLET CHUCKS • FLOATING HOLDERS • TAP CHUCKS • TAP HOLDERS • AIR-OPERATED CHUCKS
EXPANDING MANDRELS • EXPANDING-COLLETS • SPECIAL HOLDING FIXTURES

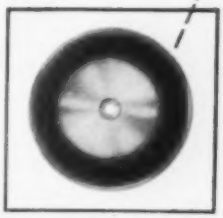


No matter how they sliced it, RUBBER dulled their SKIVING KNIVES

The skiving knives used by a rubber processor had a short service life because rubber is highly abrasive. The disk-shaped blades had to be re-sharpened after each working shift, resulting in costly down time.

By Flame-Plating the knives on one side with tungsten carbide, their service life was increased 15-fold. Also, the knives gained the advantage of a self-sharpening effect: as the uncoated steel side wears more rapidly than the coated side, a sharp edge is always presented to the material being cut.

Flame-Plating is LINDE's special process for coating metals with a very hard and durable surface. By this method, tiny particles of tungsten carbide or aluminum oxide are literally *blasted* onto almost any metal surface. Most important, the temperature of the part seldom exceeds 400-degrees F., so there is little or no chance of changes in the shape or metallurgical properties of the part being coated. Flame-Plated coatings can be applied from .010 to .002 inches thick, and finished to 0.5 microinches rms.



The machinery and equipment you use to fabricate rubber can have its service life greatly extended at critical points of wear by Flame-Plating. For more information, write for a free copy of the booklet, "Flame-Plating," F8065. Address Flame-Plating Dept., LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in other principal cities. *In Canada:* Linde Company, Division of Union Carbide Canada Limited.

Linde
TRADE-MARK

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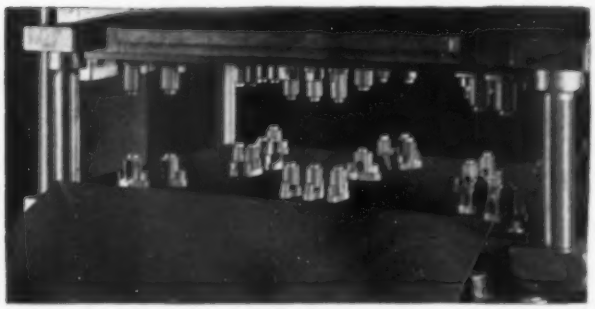

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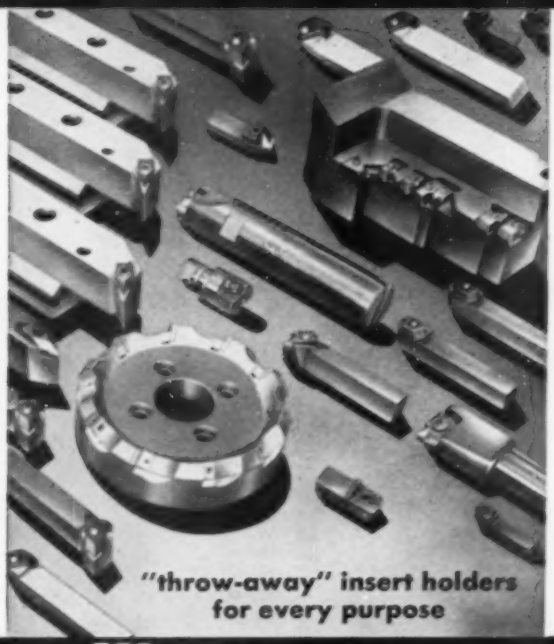

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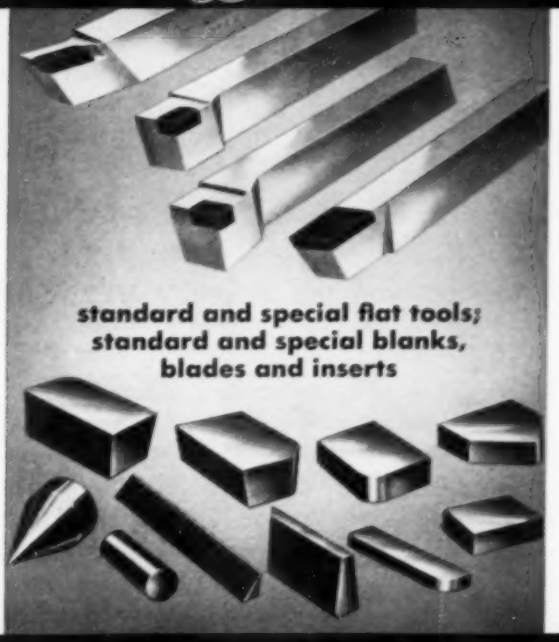

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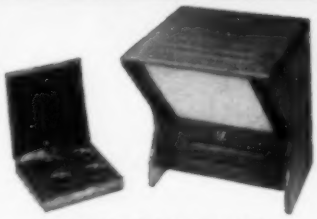

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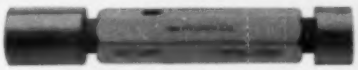

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PLUG GAGES

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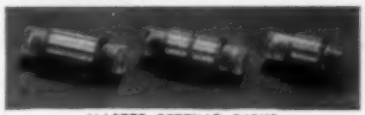

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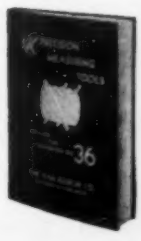
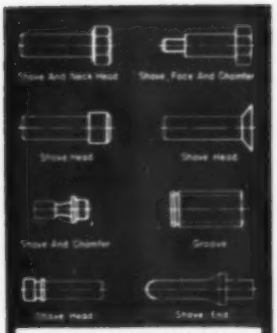
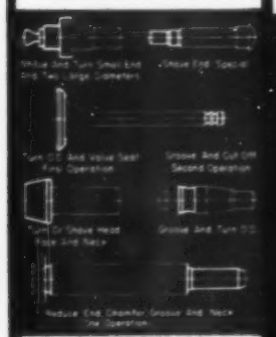




Typical parts machined on the "LS"-3600



Illustrating operations completed on the S-4300

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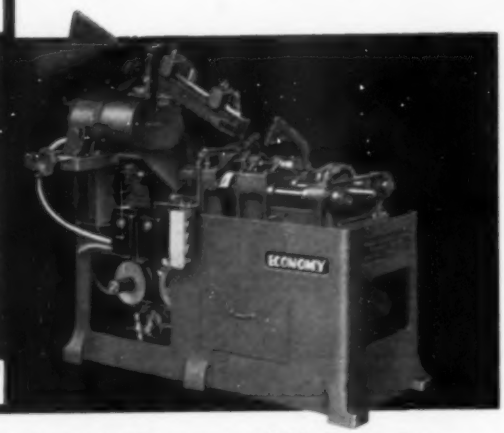

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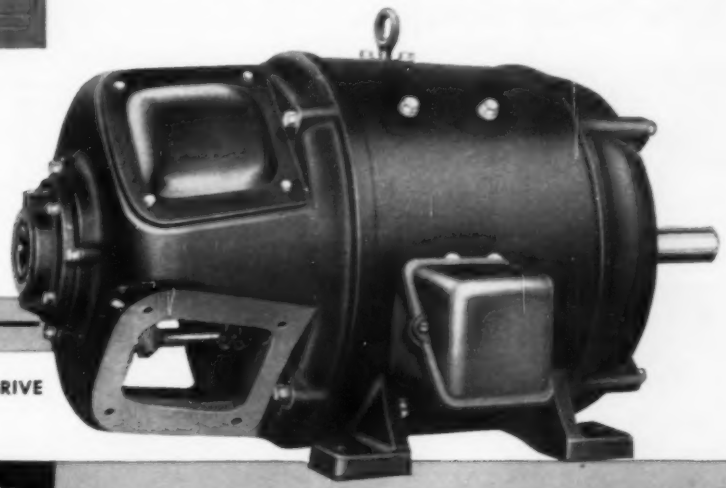

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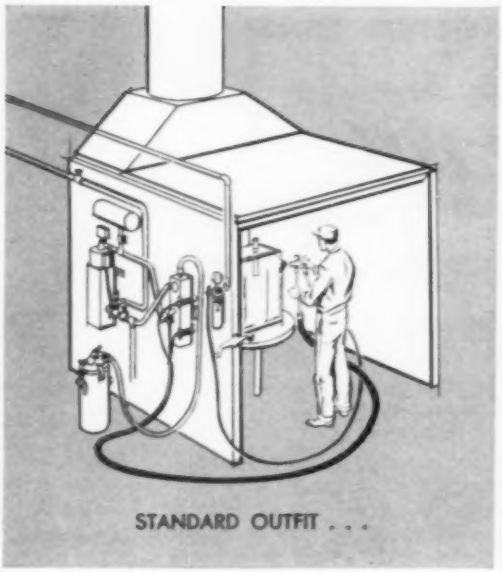

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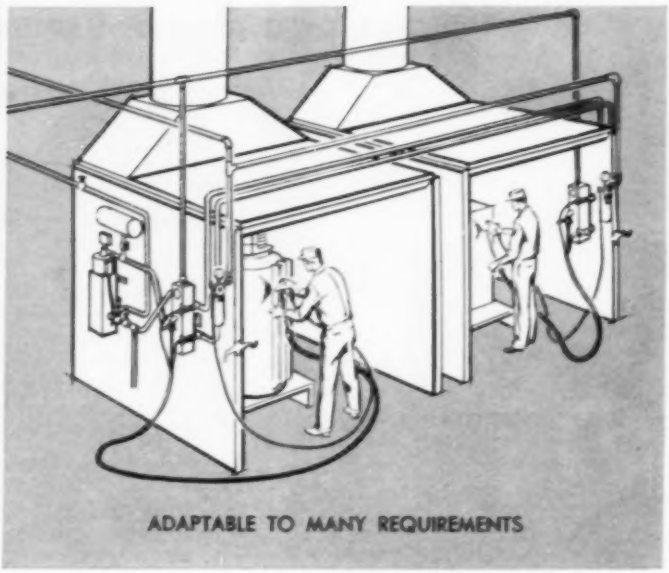

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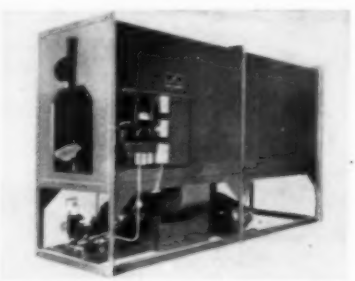

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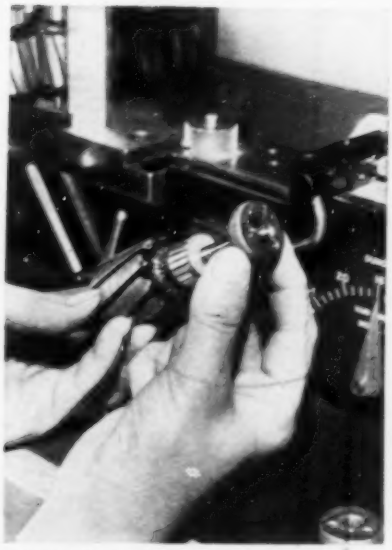

PRECISION ACCURACY — Bodine Electric Co., Chicago, uses Besly-Metro thread plug, thread ring, plain cylindrical plug and ring gages to assure precision accuracy of parts for electrical motor production. Asked why he uses them, A. Wermund, inspection foreman, says, "Last longer—sturdier built."

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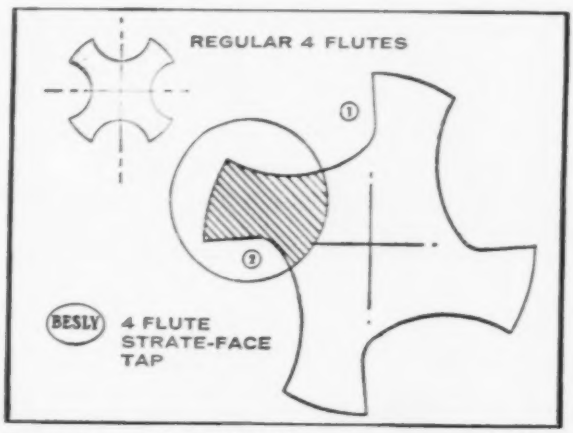

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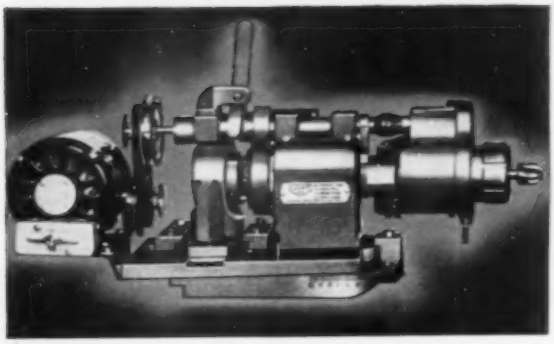

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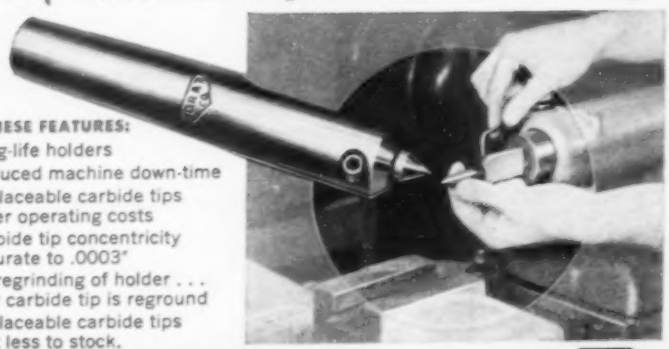

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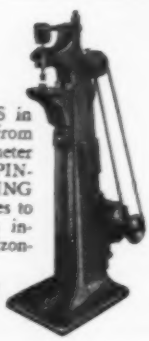

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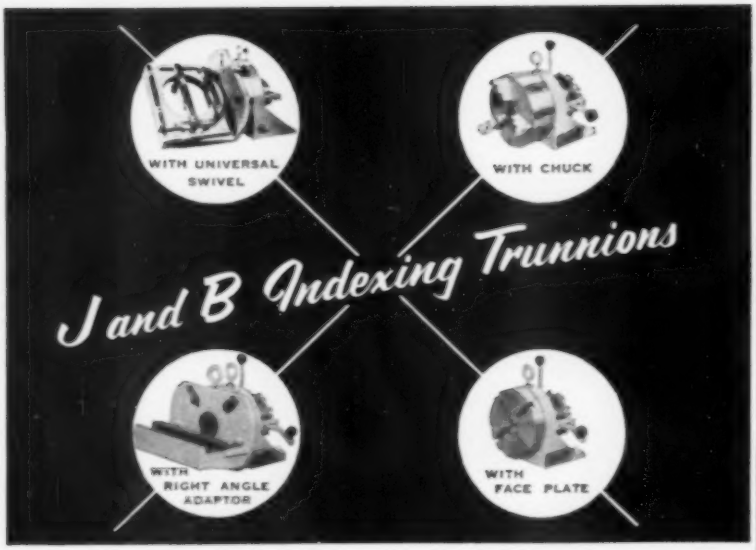

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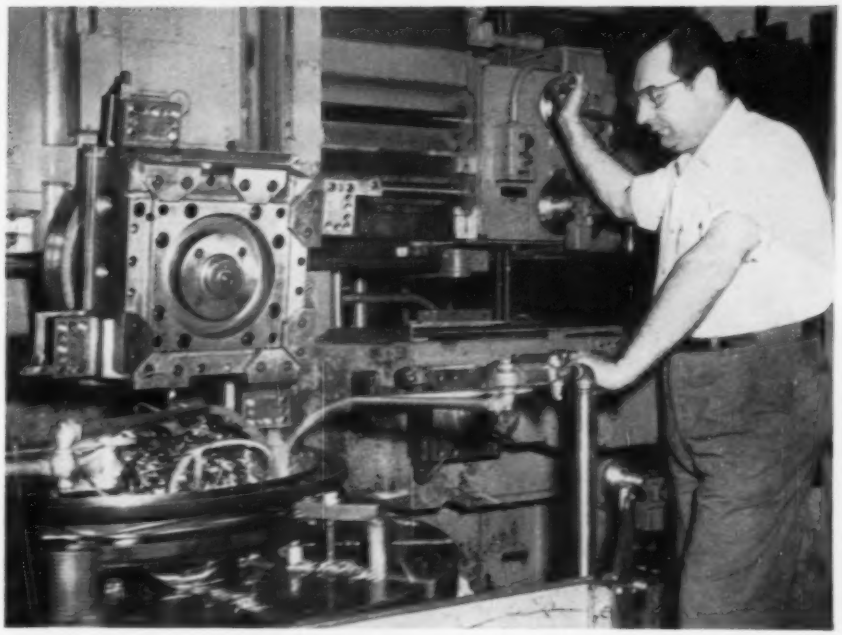

● Many metalworking plants throughout the country increase the efficiency of machine tools by adding IMMUNOL to soluble oils. They get these outstanding benefits:

1. BETTER DISPERSION OF METALLIC SILT.
IMMUNOL keeps metal dust and chips from forming into globs of metal that interfere with efficient operation.

2. GREATER RUST PROTECTION.
IMMUNOL eliminates corrosion and extra cleaning operations because it leaves a protective rustproof coating on metal parts.

There are various grades of IMMUNOL used for rustproofing, cleaning, magnetic inspections, etc.

3. COOLER WORK, BETTER FINISHES, LONGER TOOL LIFE.
A mixture of one pint of IMMUNOL to 50 gallons of oil improves the wetability and heat convection properties of soluble oils. This assures cooler work, prevents chip build-up and welding. Finishes are better and tools last longer. The same results are obtained when 2 oz. of IMMUNOL per gallon of oil is added to straight cutting oils and sulphurized oils.

4. COMPLETE AND EASY REMOVAL OF DRIED SOLUBLE OIL FROM FINISHED METAL.

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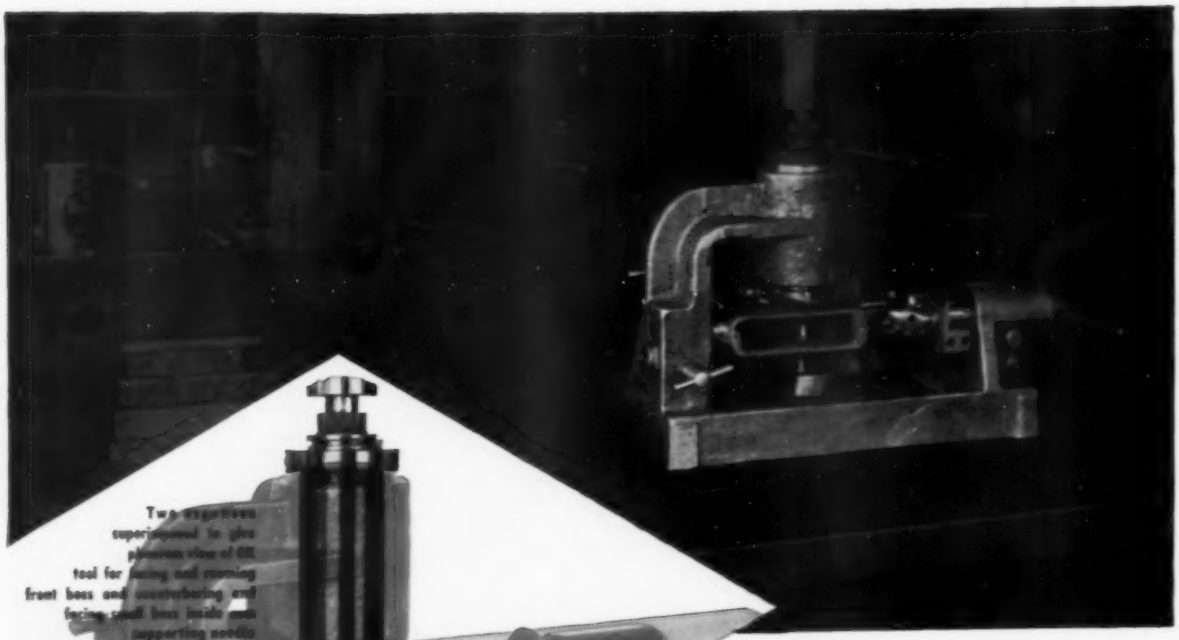

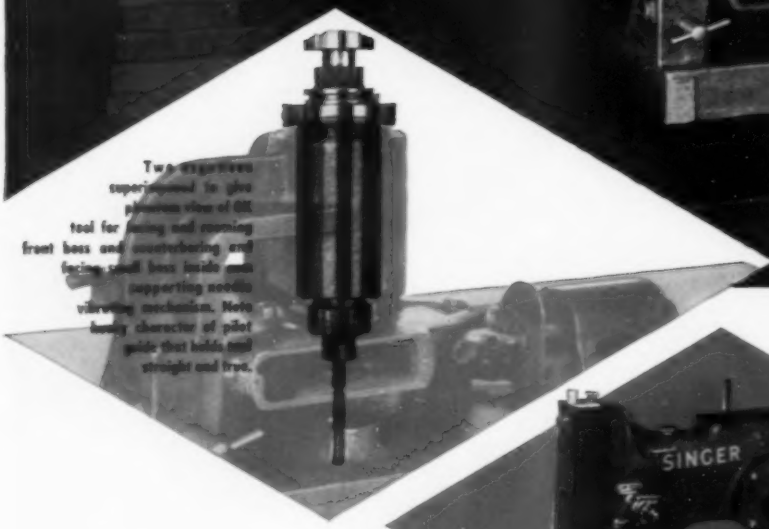

Two progressive operations are performed in this fixture to give maximum rate of production. Tool for facing and reaming front boss and counterboring and facing small boss inside main boss. Note supporting needle bearing mechanism. Note heavy character of pilot guide that holds tool straight and true.

Singer Sewing Machines, Class 143W, are used in industry for over stitching coat pads, binding awnings, finishing elastic belt goods and foundation garments, shoe linings, window shades and stitching lace, applique, flag stars, etc.

at SINGER...

four operations with one stroke...+

JOB DATA

Operating speed... 145 rpm

Feed... .013 feet per revolution

Depth of cut... facing, 3/32" reaming, 3/8"

Before Singer acquired these OK two-step piloted reaming and facing tools, downtime ran high. After 300 pieces, tools were out for grinding. Now they get 750 pieces before grinding, an increase of 150 per cent. One man works two spindles, producing 50 units per hour without pushing and maintains tolerances plus and minus .001". Workpiece is a sand molded grey iron casting, not the easiest material to machine. This is one of dozens and dozens of high speed steel and carbide bladed multiple-diameter tools OK has made for Singer. OK tool designing and engineering service is free and it's fast. If you have a tooling problem, why not talk to us about it. Just send us a blueprint, sample or picture with information as to the material, quantities, machines and horsepower available. In a week you will receive a print for approval and in another two weeks the actual tool will be making chips fly.

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Patent Applied for

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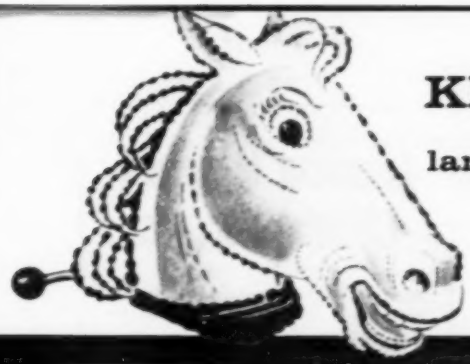
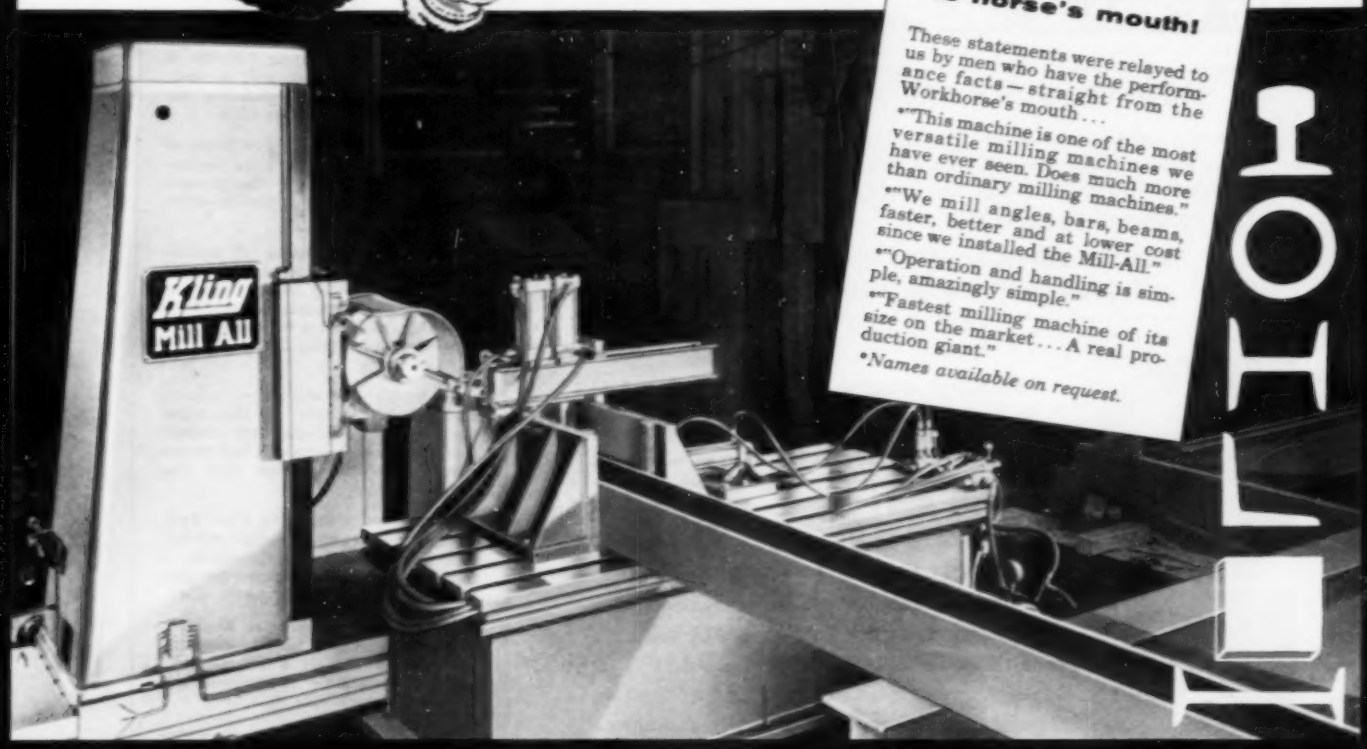
THE DYKEM CO., 23018 NORTH 11TH ST., ST. LOUIS 6, MO.



Kling Workhorses speak the language production men love to hear!



RIGHT out of the horse's mouth!

These statements were relayed to us by men who have the performance facts — straight from the Workhorse's mouth . . .

*"This machine is one of the most versatile milling machines we have ever seen. Does much more than ordinary milling machines."

*"We mill angles, bars, beams, faster, better and at lower cost since we installed the Mill-All."

*"Operation and handling is simple, amazingly simple."

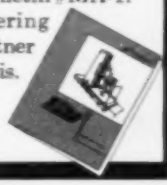
*"Fastest milling machine of its size on the market . . . A real production giant."

*Names available on request.

*We reduced actual milling time better than 50% with the Kling Mill-All

Savings in time of as high as 90% have been reported by men who have the performance facts . . . Reports from buyers, users and owners of the Kling Workhorse Mill-All milling machine, the Men Who Know, claim this machine to be the top value in its field. They'll tell you it has built-in versatility and power for facing structural steel shapes of all kinds.

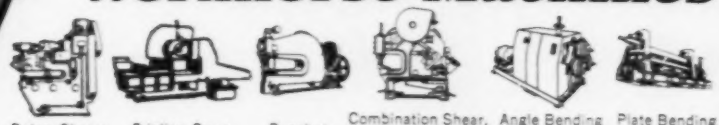
We'd like you to get these facts straight from the men who have the facts . . . *the performance facts* . . . We'll gladly send you a list of Kling Mill-All installations in your area. Write today for a list . . . and complete technical bulletin #MA-1. Kling Brothers Engineering Works, 1320 North Kostner Avenue, Chicago 51, Illinois.



This outline of average Mill-All cutting times on structural shapes will give an idea of the important time-savings that can be made with this machine. Depth of cut is ½" except for plate facing where depth of cut is ¼". Time given is for 1 cut.

TYPE OF WORK		TIME
H	4"—13 lb. B.S.	6 seconds
I	6"—12.5 I-Beam	8 seconds
H	24" x 12" x 100 lb. W. F. Beam	48 seconds
L	8" x 8" x 1" Angle	14 seconds
■	24" x 36" plate, face one side	8 minutes

Kling Workhorse Machines



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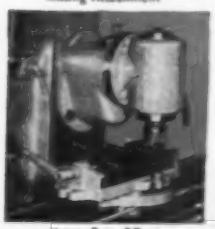
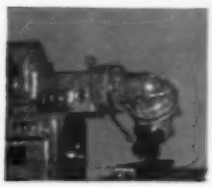


Heavy Duty Offset Vertical Milling Attachment

Universal Milling Attachment



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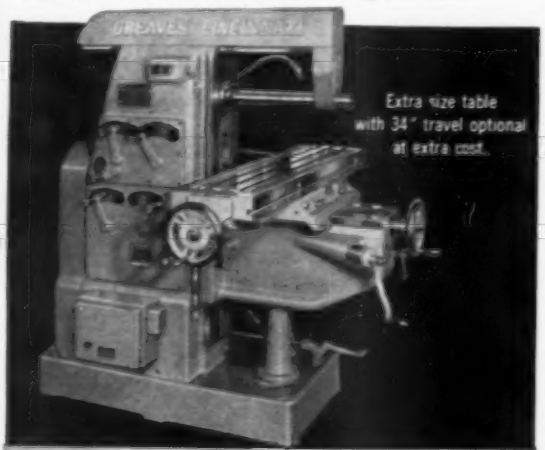

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The Oil-Mist system atomizes oil into air-borne particles, carries them through tubing to all lubrication points and bathes every moving surface with a cool film of clean lubricant while machines operate. It provides constant, uniform, completely automatic lubrication to a few or to hundreds of bearings. Accurate and foolproof, Oil-Mist eliminates guesswork. No bearing can be overlooked or over-lubricated.

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An Oil-Mist system can be applied to any new or installed machine. Find out in detail how it cuts costs, reduces man-hours and machine downtime, extends bearing life, and increases production.

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Heintz Achieves Volume Production with New Sciaky Counter Control Welders

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The Jet Engine Division of the Heintz Division, Kelsey-Hayes Company, a large Philadelphia contract fabricator, manufactures original and replacement parts for the aircraft industry. This means their production must meet exacting jet engine specifications.

New Sciaky Counter Control

To help meet these requirements, Heintz now uses Sciaky Patented Three-Phase Resistance Welders with the new Predetermined Electronic Counter Control. This new unit provides precise control of all welder functions for absolute production consistency. All control settings are realized with extreme accuracy, and are readily reproduced at any time to duplicate previous production runs. The machine cannot deviate from its setting.

Fig. 1 Seam welding Nimonic to Nimonic on Pratt & Whitney Aircraft J-57 afterburner diffuser section.

Fig. 2 Seam welding stainless to stainless on Pratt & Whitney Aircraft J-57 jet engine transition duct assembly. Note simple fixture used.

The Sciaky Predetermined Electronic Counter Weld Control is the only control of this type that has been proved in service, and the first unit of this kind has now been in use nearly two years.

How It Works

The Sciaky Predetermined Electronic Counter Control counts the cycles of power line frequency which is governed by the U.S. Naval Observatory. In predetermined absolute numbers, cycles and impulses are simply counted by a Dekatron tube to control the duration of the various welder functions. The absolute consistency of the control eliminates the need for time-consuming periodical check-out or calibration. Plug-in feature permits easy unit replacement, or addition of other control functions if required.

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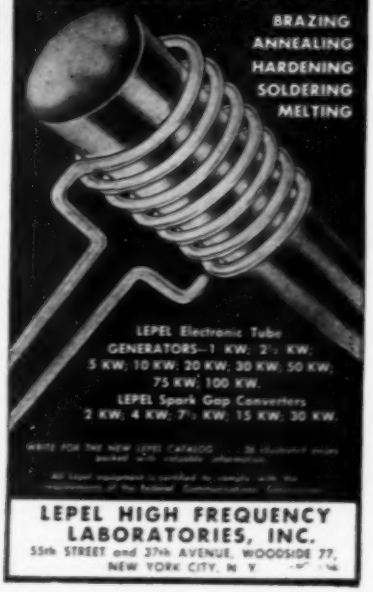

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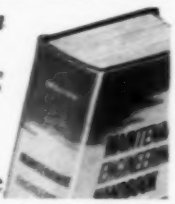

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- easier to operate
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The secret lies in a new anti-friction principle—steel balls recirculating in closed-circuit raceways. They permit Saginaw b/b Screws to change rotary motion into linear motion with over 90% efficiency and 4.5 less torque than Acme screws. Result: Saginaw b/b Screws save manual effort or electrical power; they permit space savings—smaller motors and gear boxes; they provide more dependable performance; more precise positioning; more temperature tolerance and more lubrication latitude.

Automatic Garage Door lifts and lowers easily and smoothly when actuated by Saginaw b/b Rolled Thread Screw.

SEVEN STANDARD SIZES REDUCE COSTS

Top-quality Saginaw b/b Screws are the only kind stocked in seven standard commercial rolled thread sizes, cut to desired length, for low cost and fast delivery. Or you can order custom machined screws for critical or extreme precision applications. Saginaw has successfully built screws from 1½ inches to 39½ feet long—⅛ inches to 10 inches diameter.

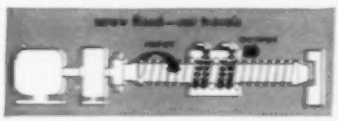
MANY TYPICAL APPLICATIONS

Saginaw b/b Screws have been applied to automatic garage doors, automobile seat adjusters and window lifts, barber chairs, hospital beds, bumper jacks and circuit breakers. Or they can be used for heavy industry equipment like die table positioners, drill presses, lift trucks and welders.

FREE ENGINEERING HELP FOR YOUR SPECIAL APPLICATION

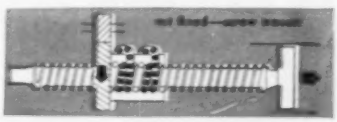
Let Saginaw's experienced engineers help solve your special application problems. Just write or phone us—no obligation.

HOW THE WORLD'S MOST EFFICIENT ROTO-LINEAR DEVICE WORKS



When rotary motion is applied to the screw, the b/b nut is driven along the axis of the screw, changing rotary motion to linear motion with over 90% efficiency.

When rotary motion is applied to the b/b nut, the screw is driven along its longitudinal axis, changing rotary motion to linear motion with over 90% efficiency.



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or see our section in Sweet's Product Design File

Saginaw Steering Gear Division
General Motors Corporation
b/b Screw and Spline Operation
Dept. SAM, Saginaw, Michigan

Please send new engineering data book on Saginaw b/b Screws and Splines to:

NAME _____

COMPANY _____ TITLE _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Saginaw

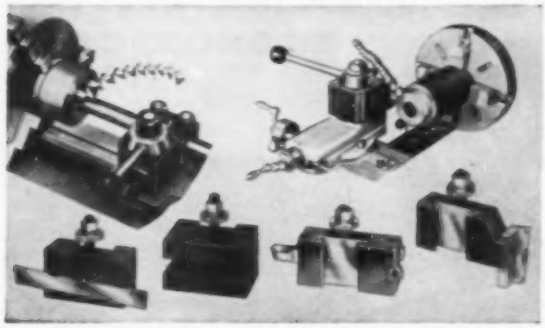
ROLLED THREAD ball bearing Screw

SAGINAW STEERING GEAR DIV., GENERAL MOTORS CORP., SAGINAW, MICH.

NOW! LATHE USERS CHANGE TOOLS in a ... FLASH ..

ALORIS QUICK CHANGE TOOL POSTS & HOLDERS

Speed Your Operation .... Save You Money



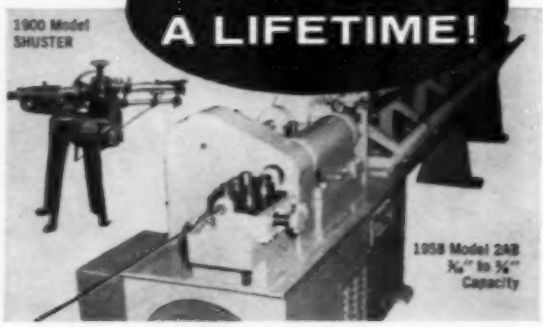
Only a second to change tools for turning, facing, drilling, boring, threading, knurling, cutting off or any other operation.

- Great Repetitive Accuracy
- Rugged Construction
- Tested and Recommended by Leading Lathe Manufacturers
- Greater Rigidity
- Saves 90% in Set-Up Time
- Unconditionally Guaranteed

Write for catalog and price list.

ALORIS TOOL CO., INC. 419 GETTY AVENUE CLIFTON, NEW JERSEY

THEY LAST A LIFETIME!



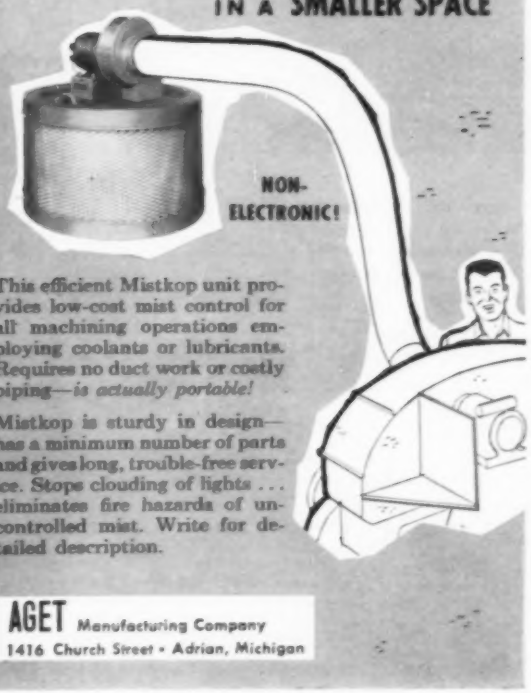
SHUSTER — the oldest name in wire straightening and cutting — makes machines that consistently pay their keep over and over again. Many fifty and sixty year old Shusters are still working a full shift every working day! And today's Shusters give the same full value — send us your specs for wire from .020" to 1 1/16" — and we'll prove that a Shuster pays for itself faster than any comparable machine — and it pays *you*, over a lifetime of profitable use.

METTLER MACHINE TOOL, Inc.

153 W. Adeline St., New Haven, Conn.

MISTKOP STOPS MIST

COLLECTS MIST-FOG EFFECTIVELY IN A SMALLER SPACE



This efficient Mistkop unit provides low-cost mist control for all machining operations employing coolants or lubricants. Requires no duct work or costly piping—*is actually portable!*

Mistkop is sturdy in design—has a minimum number of parts and gives long, trouble-free service. Stops clouding of lights ... eliminates fire hazards of uncontrolled mist. Write for detailed description.

AGET Manufacturing Company
1416 Church Street • Adrian, Michigan

Geared to the Job!

Agitator tank operation will be bettered with the assistance of this perfectly matched set, comprised of 2 steel bevel gears weighing 1900 pounds each, and 2 steel bevel pinions of 510 pounds each. Specifications of 56.4" O.D., 7" F., 70 T., 1¼ D.P. and 15.95" O.D., 7" F., 18 T., 1¼ D.P., respectively, were met precisely. Stahl's progressive experience is at your disposal. Send for estimate.

SPURS TO 72" PD. 1 DP
BEVELS TO 54" PD. 1 DP
SPIRAL, HELICAL and WORM GEARS TO 48" PD. 2 DP
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SPROCKETS TO 72" PD. 2½" CP
RACKS TO 20 FT. LONG, 3 DP
SILENT GEARS RAWHIDE, BAKELITE, FIBROIL
HEAT TREATED CASE OR FLAME HARDENED GEARS— OF CARBON OR ALLOY STEEL

Stahl
GEAR & MACHINE COMPANY
3901 HAMILTON AVENUE
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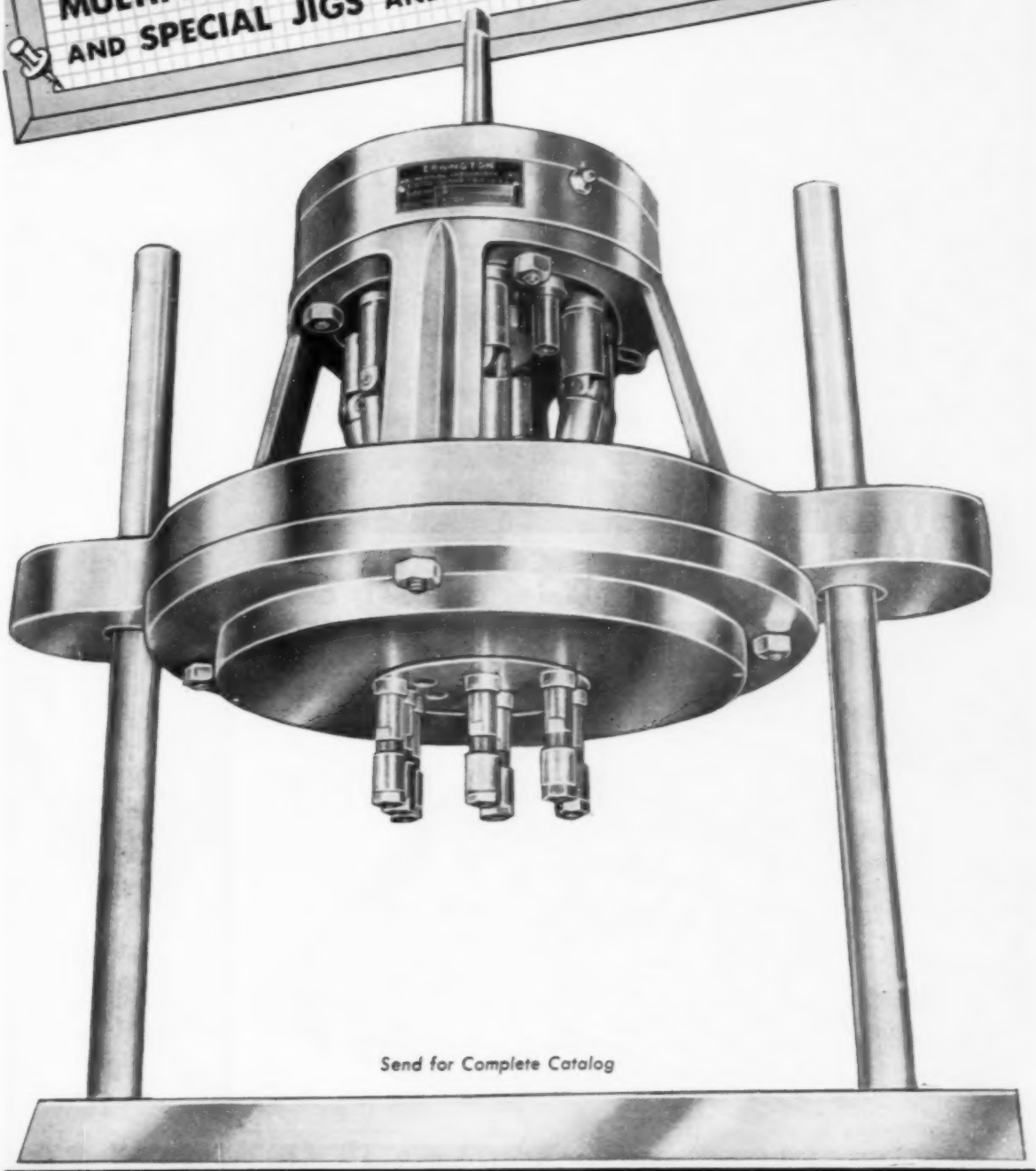
DESIGNERS
AND
BUILDERS OF
MULTIPLE DRILLING AND MULTIPLE TAPPING HEADS
AND SPECIAL JIGS AND FIXTURES



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Established 1891

ERRINGTON MECHANICAL LABORATORY, INC.

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SQUARE

GAGE BLOCKS

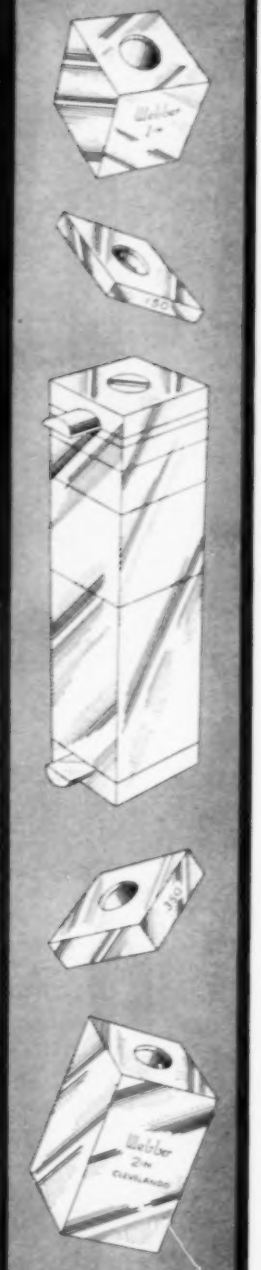
in Steel and Croblox

Webber Gage Company, ***pioneers in the development of Chrome Carbide Gage Blocks,*** proudly announce the availability of **SQUARE** Gage Blocks both in standard steel and Croblox (solid chrome carbide).

Catalog and prices available upon request.

Webber **GAGE COMPANY**
12901 Triskett Rd., Cleveland 11, Ohio

Set No. 88A w/accessories plus one pair .100 and one pair .050 Croblox wear blocks.



LARGEST EXCLUSIVE MANUFACTURERS OF PRECISION GAGE BLOCKS

5 BARDONS & OLIVER Automatic Cutting-off Lathes replace 11 machines at CRANE Co.

The results at Crane Co., leading producer of valves and fittings:

- **5 machines cutting-off and chamfering the entire production of pipe nipples**
- **More production with less than half as many machines**
- **Additional floor space made available for other production facilities**
- **Performance of all 5 machines entirely satisfactory**

The Crane Co. story is normal rather than unusual. In all segments of industry where pipe, tubing, and bar stock are cut-off, the reports are much the same.

Adaptable to any situation, the cutting-off lathes may be:

- **Automatic, semi-automatic or hand operated**
- **Air or hydraulically controlled, or a combination of the two**
- **Equipped with chamfering and forming attachments**
- **Supplied with automatic loading tables and transfer equipment**

Whatever your cut-off problem is, Bardons & Oliver, Inc. has a machine to do the job. Write today for more information and production estimates on your work.

Manufacturers of a complete line of Turret Lathes and Cutting-off Lathes

BARDONS & OLIVER, INC.

1134 WEST 9TH STREET • CLEVELAND 13, OHIO

from INFILCO, leaders in liquid treating equipment

DELIVERS CLEANER COOLANT, DRIER SWARF

REDUCES NUISANCE and COSTS of SUMP CLEANING

IMPROVES WORK QUALITY and PRODUCTION

LESSENS RANCIDITY, HELPS CONTROL DERMATITIS

The INFILCO coolant separator for ferrous metal working is equipped with new type permanent magnets in a liquid tight, non-corrosive drum. It provides more efficient cleaning of soluble oils, chemical coolants and mineral cutting oils. This trouble free equipment meets the demands of today's production line standards. "Timed cycle" operation controls the formation of magnetic brush for maximum removal of contaminants by straining and combing the coolant flow. Solids removed are delivered dry for easy disposal.

The Magnetic Separator is part of the complete INFILCO line of automatic equipment for cleaning, disposal or reclamation of industrial liquids. Capacities from 1 to 2000 gpm.

INFILCO

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INCORPORATED
TUCSON, ARIZONA

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Ferrous ☐ Non-Ferrous ☐ Coolant ☐ Cutting Oil ☐

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VAILL

TUBE END-FORMING MACHINES

shape and form tube ends

fast... accurate... at less cost

FREE—New Bulletin T-1 shows, describes VAILL tube end forming machine VERSATILITY for . . .

Beading • Flaring • Flanging • Sinking

Expanding • Grooving • Threading • Reducing

Double Lap Flaring • Double Lap Flanging

on Tubing up to 6" Diam.

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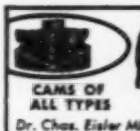
135 E. MAIN STREET WATERBURY 20, CONN.

TANNEWITZ

VARIABLE SPEED TOOL ROOM BAND SAWS AND HIGH SPEED METAL CUTTING BAND SAWS . . . SINGLE OR VARIABLE . . . 50 TO 15,000 FPM. PRODUCT OF MORE THAN 50 YEARS OF SPECIALIZATION. Write or phone.

The TANNEWITZ WORKS Grand Rapids, Michigan



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A SPECIALIZED CAM MILLING SERVICE
Over 100 Types of INDEXING TURNTABLES

Also Geneva Gears, Spot and Butt Welding, Positioners for Brazing, Spraying, Welding and Soldering

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Contract production; Special automatic machines

EISLER ENGINEERING CO., INC.

MODEL D

SHORE SCLEROSCOPE HARDNESS TESTERS

Pioneer American Standard

SINCE 1907

Available in Model C-2 direct reading or in Model D dial indicating with equivalent Brinell and Rockwell C Hardness Numbers. May be used free hand or mounted on bench clamp. Sensitive over entire range from softest to hardest of metals without adjustment. Non-injurious to work.

OVER 40,000 IN USE

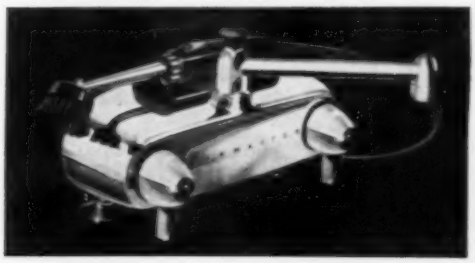
THE SHORE INSTRUMENT & MFG. CO., INC.
90-35B Van Wyck Exp.
Jamaica 35, N. Y.

MODEL C-2

FACT: *Copper and Brass . . . today's best metal bargains!*

Competitive analysis of metal costs in manufacturing "Dishmaster" dish washer device switched manufacturer back to brighter, more attractive brass and away from plated steel and other substitutes.

PROOF: *Manville Manufacturing switches back to Brass for a better product at lower cost . . . drops steel!*



The "Dishmaster" made by Manville Manufacturing Co. of Pontiac, Michigan, includes many small parts again being made of brass. Direct comparison of costs with cadmium-plated steel showed that brass was once again the bargain buy in metal. For example, cost of the retaining ring shown here was reduced $11.50 per thousand when the manufacturer switched back to brass! Comparable component savings are being made all down the line! (Based on October '57 costs of brass vs. steel.)

There's no excuse for using substitutes for copper and brass: the genuine article is today's best bargain in metals! Your nearest Chase man can show you specifically how Chase alloys—made of Kennecott copper—can fit into your production picture. Contact Chase locally or at Waterbury 20, Connecticut.

Chase®

BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

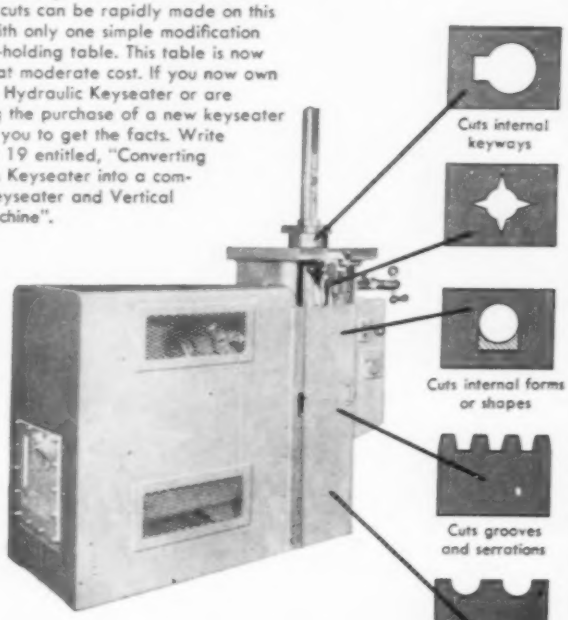
The Nation's Headquarters for Brass, Copper and Stainless Steel

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

TRIPLE THE USEFULNESS OF YOUR M&M KEYSEATER AND VERTICAL CUTTING MACHINE

Simple modification greatly increases productive capacity of this versatile machine.

An M & M Hydraulic Keyseater is not only a keyseater that cuts internal keyways up to 5" wide but a vertical cutting machine as well. Serrations, grooves, teeth—a wide variety of cuts can be rapidly made on this machine with only one simple modification — a work-holding table. This table is now available at moderate cost. If you now own an M & M Hydraulic Keyseater or are considering the purchase of a new keyseater it will pay you to get the facts. Write for Bulletin 19 entitled, "Converting the M & M Keyseater into a combination Keyseater and Vertical Cutting Machine".



M&M KEYSEATERS AND VERTICAL CUTTING MACHINES

MITTS & MERRILL • 104 Holden Street • SAGINAW, MICHIGAN

98

Handle your small part precision JIG BORING on the LINLEY JIG BORER

Why tie up your big, costly jig borers on small work when you can get maximum utility at less cost per hour on a machine exactly fitted to your work? Put your small work on the LINLEY where it belongs and reserve your large machines for large work, where large work belongs. You'll save money this way.

SPECIFICATIONS

Table Movement: 6" x 10" — Table Size: 7" x 17½"

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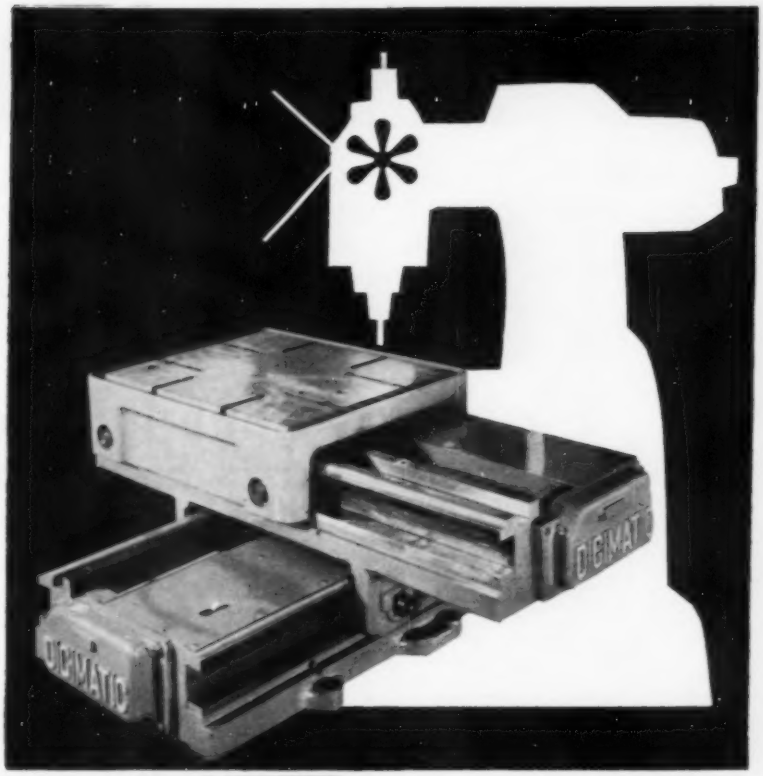

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point-positioning control system

enables one drill press to do the work of **5**

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- *More Productive Machine Time*

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DIGIMATIC Tape Preparation Unit. Programs drilling operation from shop drawings. Simple to operate as office calculating machine.

AUTOMATIC PATH CONTROL SYSTEMS ALSO AVAILABLE FOR YOUR PRESENT CONTOUR MILLING MACHINES

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ELECTRONIC CONTROL SYSTEMS

DIVISION OF **STROMBERG-CARLSON COMPANY**

A DIVISION OF GENERAL DYNAMICS CORPORATION

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8'17" col. Dreses, gear box m.d.
Baush Radial Drilling & Tapping Machine, m.d.

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No. ½ Avey, m.d.
No. ½ Avey MA-8, m.d.
No. 2 Avey, m.d.
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No. 48W Foodick, single spindle, H.S., m.d.
1 spindle No. 2MA6 Avey H.S., m.d., 7½" overhang, 1943
No. 2B—8" H.D. Edlund, H.P., m.d.
2 spindle Atlas Bench Type, 1942
2 spindle Allen, belted m.t., 8" overhang
2 spindle No. 2 Avey H.S., belted m.d.
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2 spindle No. 2 Leland-Gifford H.S., 8" overhang, m.d.
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3 spindle No. 3 Morse Taper, Foote-Burt "Bipp" H.S., m.d.
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3 spindle Leland-Gifford 21 LNS—H.S., m.d., late
3 spindle Leland-Gifford H.S., m.d.
4 spindle Leland-Gifford, m.d., on each spindle
4 spindle No. 15 Buffalo Bench Type
4 spindle Allen H.S., belt drive
4 spindle No. ½ MA6 Avey, H.S., m.d.
4 spindle Demco H.S., individual m.d.
4 spindle No. 2BMA-6 Avey H.S., m.d.
Walker Turner H.S., vee belt drive
5 spindle Allen H.S., belt drive
6 spindle Leland-Gifford, m.d., on each spindle, No. 2 taper
6 spindle No. 1 Avey High Speed, m.d.
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HORIZONTAL DRILLS

2 spindle W.F. & John Barnes, m.d.
No. 2 Avey Style MA1, with horizontal operation
3 way Natco Horizontal Drill, consisting of 3E13 Holounits
No. ½ Ra50" Pratt & Whitney Gun Barrel Riding Machine, Model M 1621, m.d., latest
No. 1½x100" Model M1625 Pratt & Whitney 2 spindle Gun Barrel Riding, m.d.
No. 1 Model M500, Pratt & Whitney 2 spindle Deep Hole Drill, belted m.d.
Model 410 W.F. & John Barnes, Horizontal Boring & Drilling Machine, m.d.
Natco Horizontal Drill, holostool model, m.d., 1942
Natco Horizontal Drill, 2 opposed B4F2 Head, 1943
¼"x40" Baush Double Horizontal Drilling Machine, m.d.
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MULTIPLE SPINDLE DRILLS

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3 spindle 28" Cincinnati-Bickford Upright Drill, m.d., No. 5 M.T.
2 spindle Moline Adjustable Rail
6 spindle Model M1613 Pratt & Whitney In Line Vertical Drill
6 spindle W.F. & John Barnes Vertical Drilling Machine, m.d.
No. 824 Barnes Vertical Drilling, Boring, Facing & Reaming Machine
Model C16 Natco Adjustable Multiple Spindle Drill, m.d.

UPRIGHT DRILLS

20" Barnes, m.d., 1940
20" Barnes All Geared Self-Oiling Drill & Tapper, m.d.
20" Cincinnati-Bickford Super-Service Prod. Drill, m.d.
21" Cincinnati-Bickford, single spindle, m.d.
24" Barnes Camel Back, m.d.
No. 2AL Natco Holestool Vertical, m.d.
No. 2 Colburn Mfg. Type, m.d.
No. 201—¾" Barnes Single Sp. Self-Oiling All Geared Drill & Tapper, m.d.
4 spindle No. 201—¾" Barnes, H.D., m.d.
No. 242 Barnes Single Sp. Self-Oiling All Geared Drill & Tapper
No. H4 Barnes Hydrum, m.d.
No. 23 Foote-Burt, m.d., H.D.

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8x20" Fitzhburg Hydraulic Spline & Gear Grinder, m.d.
5G11 Gear Grind Spline Grinding Machine, m.d., latest
6G19 Gear Grinding Machine, m.d., latest
6G31 Gear Grinding Machine, internal gear & Spline Grinder, m.d.
10" Pratt & Whitney Model M1630 Single Wheel Gear Grinder Machine, m.d.
15" National Broach Red Ring Gear Lapper, m.d.
18" National Broach Red Ring Gear Lapper, m.d., late

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CABLE ADDRESS EMCO

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Hilles & Jones Pyramid No. 5, 14" x 54" capacity.

48 Kearney & Trecker Heavy Duty Vertical Miller Serial 3-1175.

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GRINDER—B & S Surface No. 2, 6x18", mtr spl
GRINDER—Hanchett Hydraulic Vert Spl 12x48"
GRINDER—Cincinnati Cylindrical 6x18", Hydr.
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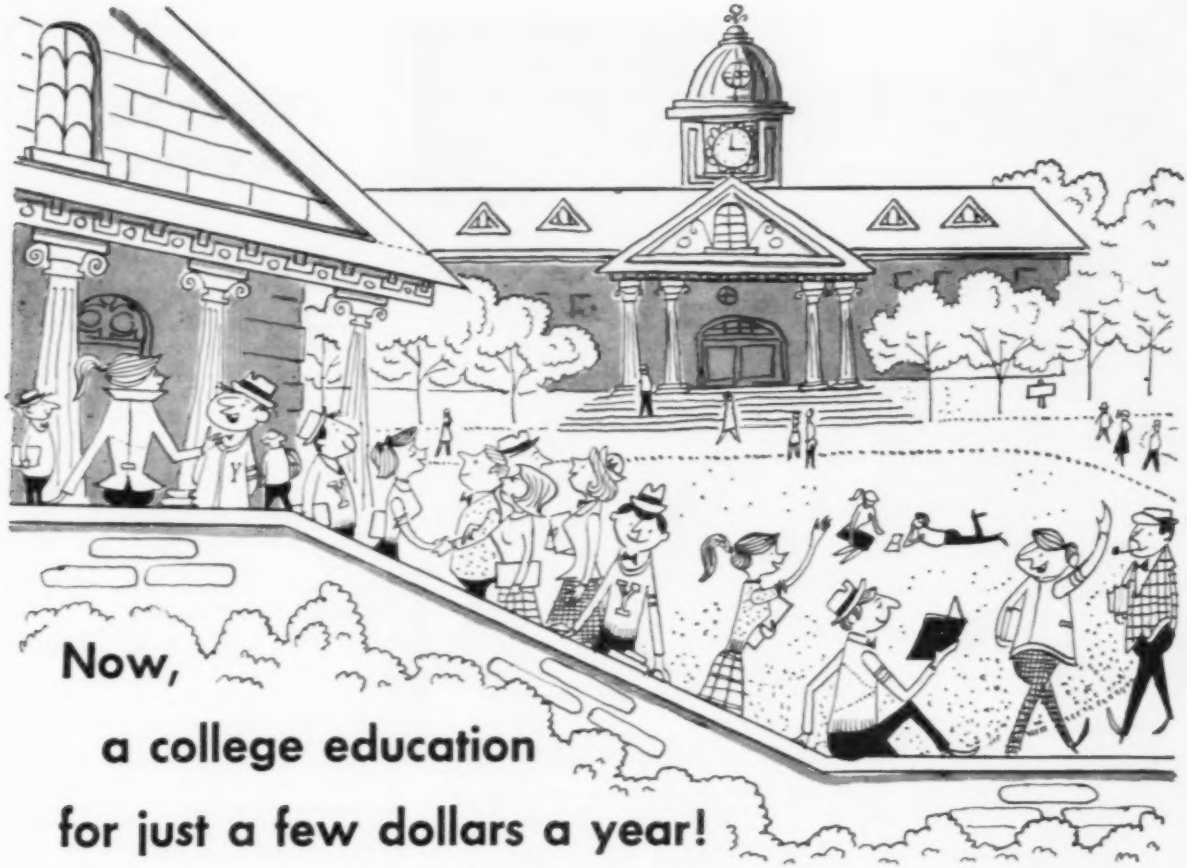

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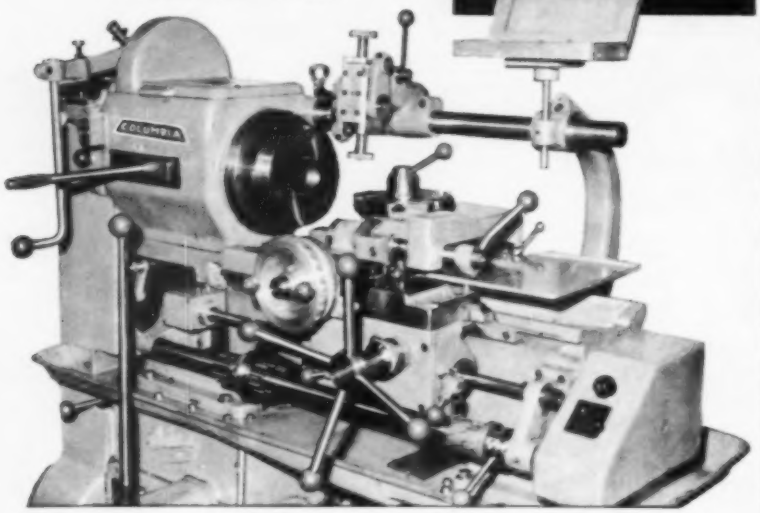

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INDEX TO ADVERTISERS

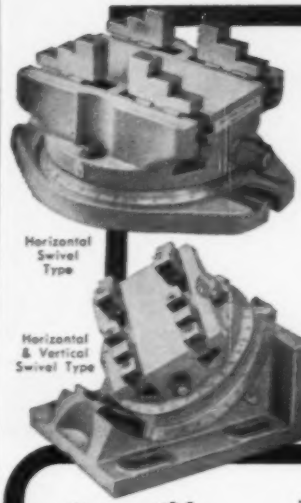
This index is published as a convenience to the readers. Every care is taken to make it accurate, but American Machinist assumes no responsibility for errors or omissions.

	Page
Acheson Colloids Company	77
Aget Manufacturing Company	366
Ajax Manufacturing Company	283
Alemite	361
Allen-Bradley Company	Insert Bet. 56-57
Almco Queen Products, Inc.	88B
Aloris Tool Company	366
American Broach & Machine Division Sundstrand Machine Tool Co.	81
American Chain Division American Chain & Cable Co., Inc.	14-15
American Chain & Cable Co., Inc. Wilson Mechanical Instrument Div.	380
American Gage & Machine Co.	83, 287
American Schiess Corp.	322
American Sip Corporation	345
American Tool Works Co.	59
American Waldrich Mfg. Corp.	323
Armco Steel Corporation	102
Armstrong Blum Mfg. Co.	58
Armstrong Brothers Tool Company	48
Atlantic Refining Company	337
Baird Machine Company	312
Bardons & Oliver Inc.	369
Bath Co., Cyril	94
Baush Machine Tool Co.	332
Bay State Abrasive Products Co.	86-87
Bay State Tap & Die Company	49
Behr-Manning Corp.	40
Besly-Welles Corporation	351
Bijur Lubricating Corporation	298
Blake Co., Edward	324
Bodine Corp.	54-55
Boston Gear Works	329
Brown & Sharpe Mfg. Co.	42
Bryant Machinery & Engineering Co.	341
Bullard Co.	75
Bunting Brass & Bronze Co.	314
Card Mfg. Co., S. W. Division Union Tiviot Drill Co.	68
Carlton Machine Tool Company	92
Century Electric Company	349
Chandler Tool Company	362
Chase Brass & Copper Co.	371

INDEX TO ADVERTISERS

	Page
Cincinnati Bickford Division Giddings & Lewis Machine Co.	35-38
Cincinnati Grinders Incorporated	16-17
Cincinnati Lathe & Tool Co.	56
Cincinnati Milling Machine Co.	4-5
Cleereman Machine Tool Company	341
Cleveland Automatic Machine Co.	76
Cleveland Instrument Co., Inc.	379
Columbia International Corporation	378
Columbus Die-Tool & Machine Co.	336
Commercial Filters Corporation	33
Cone Automatic Machine Company Pilot Division	70
Copperweld Steel Company	270
Covel Manufacturing Company	384
Crane Packing Co.	268
Cross Company	72-73
Cushman Chuck Company	353
Davis Boring Tool Division Giddings & Lewis Machine Tool Co.	35-38
Davis Keyseater Company	362
Deakin & Son, J. Arthur	381
Detroit Die Set Corp.	293
Detroit Reamer & Tool Company	352
DeVilbiss Company	350
Disston Division H. K. Porter Company, Inc.	318
Dreis & Krump Manufacturing Co.	327
Dykem Company	358
Economy Engineering Co.	348
Eisler Engineering Co., Inc.	370
Electronics Control Systems Division of Stromberg-Carlson Company Division of General Dynamics Corp.	373
Erickson Tool Company	342
Errington Mechanical Laboratory	367
Ex-Cell-O Corporation	71, 90
Fellows Gear Shaper Company	6-7
Gatco Rotary Bushing Co.	364
Giddings & Lewis Machine Tool Company	35-38
G & L and Hypro Division Giddings & Lewis Machine Tool Co.	35-38
Gisholt Machine Company Insert Bet.	32-33
Gleason Works	3
Gorton Machine Co., George	334
Goss & deLeeuw Machine Company	292
Grant Mfg. & Machine Company	352
Gray Co., G. A.	28-29
Greaves Machine Tool Company	360
Greenfield Tap & Die Corp.	Insert Facing 88

(*Continued on page* 380)



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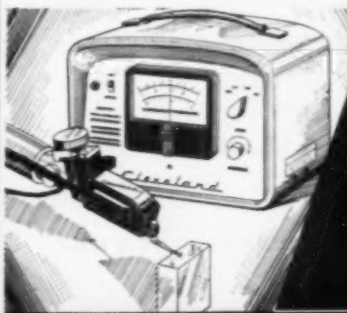

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INDEX TO ADVERTISERS

(*Continued from page* 379)

	Page
Hamilton Tool Company	381
Hardinge Brothers, Inc.	57
Haynes Stellite Co., Div. Union Carbide Corp.	61
Heald Machine Co. Sub. Cincinnati Milling Machine Co.	2nd Cover
Hones, Inc., Charles A.	324
Horton Chuck Division Greenfield Tap & Die Corp.	3rd Cover
Hydraulic Press Mfg. Co. Div. of Koehring Co.	20-21
Ideal Industries, Inc.	41
Ingersoll Milling Machine Co.	315
Infilco Inc.	370
Inland Steel Company	88
Jahn Manufacturing Co., B.	321
Johnson Machine Co., Carlyle	302
Johnson & Bassett Inc.	354
Kaukauna Machine & Foundry Division Giddings & Lewis Machine Tool Co.	35-38
Kennametal Inc.	335
Kent-Owens Machine Company	272
Kingsbury Machine Tool Corp.	47
Kling Bros. Engineering Works	359
Lamb Company, F. Joseph Insert Bet.	48-49
Landis Machine Company	10-11
Landis Tool Company	12-13
LaPointe Machine Tool Company	26-27
Lavallee & Ide Inc.	82
Lees-Bradner Company	34
Lehmann Brandes Machine Co.	265
LeMaire Tool & Mfg. Co.	64-65
Lepel High Frequency Labs, Inc.	364
Linde Air Products Co., Div. Union Carbide Corp.	343
Linley Brothers Co.	372
Lodge & Shipley Company	60
Logan Engineering Co., Lathe Div.	301
M. B. I. Export & Import Ltd.	379
Macklin Company	295
Manhattan Rubber Div. Raybestos-Manhattan Inc.	357
Master Electric Company	96
May-Fran Engineering, Inc.	330

INDEX TO ADVERTISERS

	Page
McGill Mfg. Co.	319
Mettler Machine Tool, Inc.	366
Micromatic Hone Corp.	310-311
Milford Rivet & Machine Co.	290
Miller Corporation, Harry	355
Miller Electric Mfg. Co.	364
Millers Falls Company	78-79
Minnesota Mining & Mfg. Co.	331
Minster Machine Company	308
Mitts & Merrill	372
Monarch Aluminum Mfg. Company	304
Moore Special Tool Co., Inc.	338
Motch & Merryweather Machinery Company	30-31
National Acme Company	24-25
National Automatic Tool Co., Inc.	52-53
National Electric Welding Machine Co.	67
National Machine Tool Company	328
Niagara Machine & Tool Works	50-51
Nice Ball Bearing Co.	339
Nilson Machine Co., A. H.	303
Noble & Westbrook Mfg. Co.	84
Norton Company	18-19
O. K. Tool Company	356
Oakite Products Inc.	326
Oliver Instrument Company	306-307
Orban Co., Inc., Kurt	279
Perkins Machine Company	383
Pipe Machinery Company	305
Putnam Tool Company	299
Raybestos Manhattan Inc.	357
Reed Rolled Thread Die Company	85
Reid Brothers Co., Inc.	291
Rivett Lathe & Grinder, Inc.	333
Rockford Machine Tool Company	44-45
Roto-Finish Company	309
S. P. Manufacturing Corp.	296
Saginaw Steering Gear Div. General Motors Corp.	365
Scherr Co., Inc., George	360
Schmidt Inc., George T.	358
Sciaky Bros., Inc.	363

(*Continued on page* 382)

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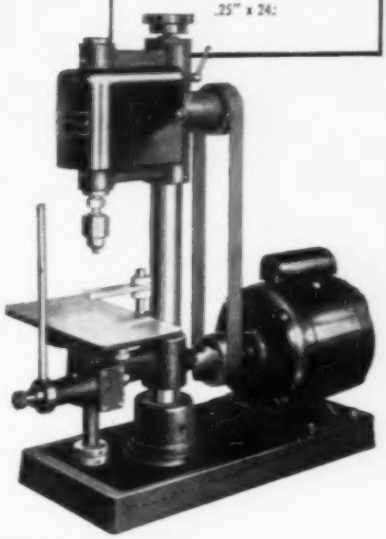

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INDEX TO ADVERTISERS

(Continued from page 381)

	Page
Sharon Steel Corporation	313
Shore Instrument & Mfg. Co., Inc.	370
Simonds Abrasive Co.	43
Simplicity Engineering Co.	46
Simpson Electric Co. Div. American Gage & Machine Co.	83
Size Control Company Div. American Gage & Machine Co.	287
Snyder Tool & Engineering Co.	289
Springfield Machine Tool Co.	104
Stahl Gear & Machine Company	366
Standard Gage Company	74
Standard Oil Co. (Indiana)	62-63
Stewart-Warner Corp.	361
Stone Machinery Co., Inc.	336
Sundstrand Machine Tool Company	80
Sun Oil Company	320
Supreme Products Corp.	300
Tannewitz Works	370
Texas Co.	98

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INDEX TO ADVERTISERS

	Page
Timken Roller Bear Co. Indus. Division	4th Cover
Tomkins-Johnson Company	101
Torit Manufacturing Company	352
Union Carbide Corporation	61, 343
Union Twist Drill Company	69
United Shoe Machinery Corp.	316
United States Drill Head Co.	66
U. S. Graphite Co.	317
Universal Engineering Company	340
Vaill Engineering Company	370
Vanadium Alloys Steel Co.	297
Van Keuren Co.	347
Van Norman Machine Co.	8-9
Vascaloy-Ramet Corporation	281
Veeder-Root Inc.	32
Vickers Incorporated Div. Sperry Rand Corp., Electric Products Div.	39
Wales Strippit Company	344
Walker Co., Inc., O. S.	294
Walker-Turner Div. Rockwell Mfg. Co.	325
Warner & Swasey Company	22-23
Wean Equipment Corp.	266
Webber Gage Company	368
Weldon Tool Co.	358
Wesson Co.	346
Whitnon Mfg. Co.	382
Williams-White & Co.	362
Wilson Mechanical Instrument Division, American Chain & Cable Co., Inc.	380
Wilton Tool Mfg. Co., Inc.	328
Wittek Mfg. Co.	304

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

EDUCATIONAL
Books 374

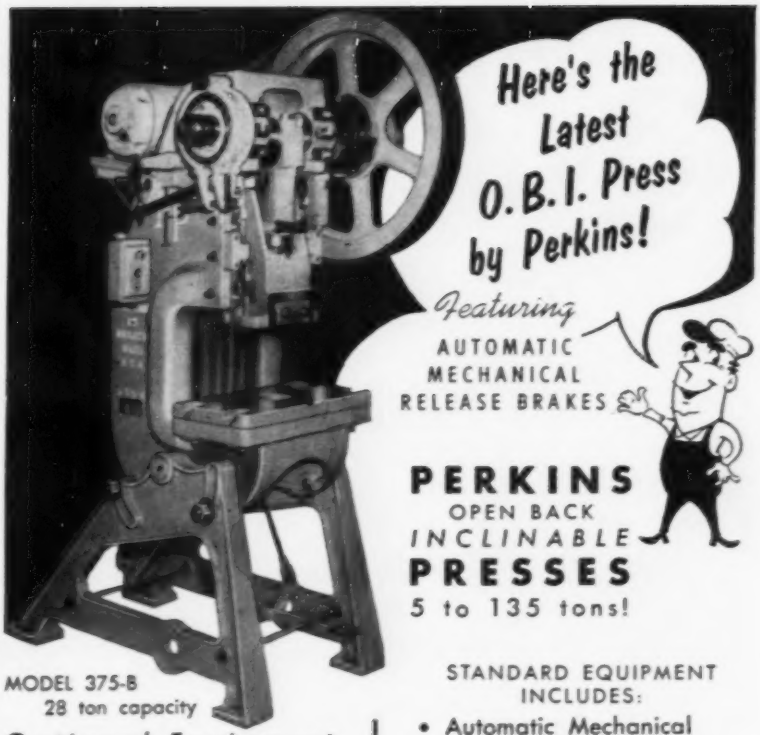
BUSINESS OPPORTUNITIES
Wanted 377

EQUIPMENT
(Used or Surplus New)
For Sale 374-377

WANTED
Equipment 377

ADVERTISERS INDEX

Aircraft Investments 374
Cincinnati Machinery 376
Bennett Machinery Co. 376
Contesse Publicite 374
Eastern Machinery 374
Falk Mill Supply Co., Inc. 376
Hazard Brownell Machine Tools 376
Hyman & Sons, Joseph 374
Machine Tool Publications 374
McDonald Machinery Co. 376
Miles Machinery Co. 376
National Machinery Exchange 376
S & S Machinery Co. 377
Sal Metal Products Co. 377



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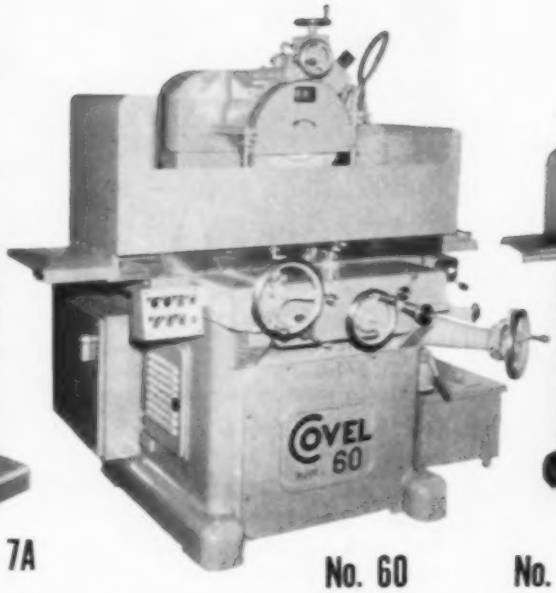
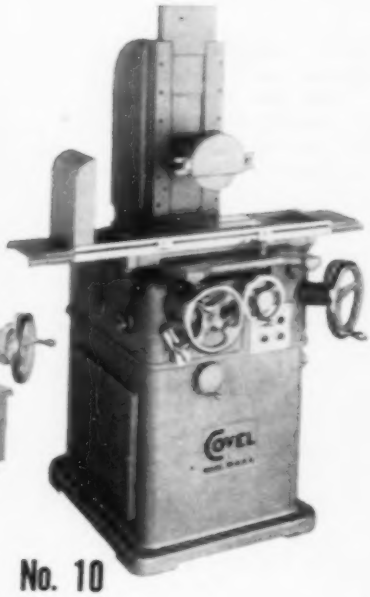


No. 60



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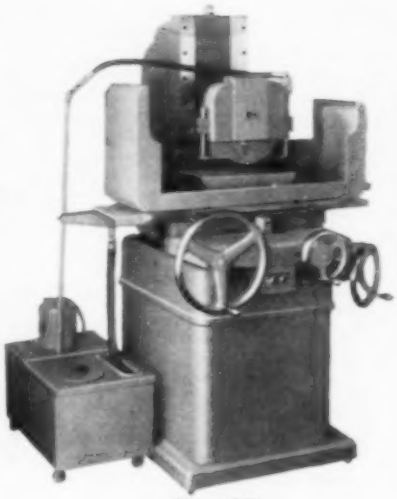

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